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ABSTRACT

Progress during the first two years (1967-1968 and 1968-1969) of a three-year home-based, mother-child intervention program called the Verbal Interaction Project is described. The project was planned for the cognitive enrichment of preschoolers 2 to 4 years old, from lower income families. The program utilized specially trained home visitors, called Toy Demonstrators, who visited mother-child pairs twice weekly over two 7-month periods. The Toy Demonstrator presented the child with 28 toys and books, and stimulated verbally oriented play by acting as a model for the mother. The mother utilized the information in her interaction with the child to develop the potential for verbal interaction when they played with the toys and books. Results of the intervention method showed that it was an effective agent for cognitive and verbal growth in the program children. The design, subjects, procedures, materials, data management, findings, and summary of findings are presented. The text is illustrated with 19 tables. Proposed plans for the third year of the project are presented along with projection of future research. Appendixes present the four data cards that are utilized in the program. References are included. (DB)

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PROGRESS REPORT

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AIDING COGNITIVE GROWTH IN DISADVANTAGED PRESCHOOLERS

Children's Bureau Research Project: R-300

by

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I. INTRODUCTION

In America, a highly technological and achievement oriented society, the requirements for complex thinking and language ability are pressing. To succeed in it (and the norms push for "success") the individual's intellect must be capable of complex conceptualization socialized in early childhood. Individuals who have the longest road to success -- those of low income -- have had the least opportunity for this kind of early socialization because of the poverty-limited perceptual experiences and concrete modes of speech characteristic of disadvantaged families. Economic poverty breeds poverty of intellect which leads to an inability to utilize educational and thus vocational opportunities even when equitable social programs make these available in a technological society. The stage is set for perpetuating that "cycle of poverty" so painfully familiar to observers - and low income participants - of the social scene in this country.

The interruption of that cycle of economic poverty by modifying the early socialization of cognition in low income families was the subject of the research supported by U. S. Children's Bureau Child Welfare Research Grant R-300. The aim of the study in 1967-1968 was to investigate a means of cognitive intervention designed to prepare preschool children to deal better with the educational institution and thus eventually to break the poverty cycle. It differed from other similarly aimed intervention efforts in being centered in the family and in making the low income mother the principal agent of her preschool child's cognitive growth. It was based on the proposition that such intervention can thus strengthen and enhance the position and influence of disadvantaged families, so frequently eroded by the economic and emotional stresses of poverty, while at the same time advancing young children's intelligence and readiness for school. As the major component of cognitive growth, the experimental intervention fostered conceptualization, closely linked with language skills, through encouraging verbal interaction between child and mother. Toys and books provided a natural and inviting focus for the stimulation of verbally oriented play activities between mothers and children by social workers visiting their homes.

II. PROGRESS IN FIRST YEAR 1967 - 1968

A. THE VERBAL INTERACTION PROJECT: METHOD AND PROCEDURE

Design

An experimental design was followed in the Verbal Interaction Project, the investigation which explored the effects on the verbal and cognitive growth of low income preschool children of a home located, verbal interaction based, cognitive enrichment program. The latter was called the Mother-Child Home Program, and its long range goal was to make the child's own mother the ultimate principal agent of intervention in his intellectual enrichment. The subjects were English speaking preschoolers and their mothers, divided into an Experimental and two Comparison Groups, each living in a low income public housing project, in three different parts of Long Island. The subjects were given standardized intelligence tests before and after the Experimental Group's exposure for seven months to the independent variable of verbally oriented play activity within the mother-child dyad, focused around toys and books, including verbal interaction, and stimulated by home visits by social workers ("double intervention"). One Comparison Group received no intervention of any kind; the other was exposed to one aspect alone of the independent variable -- home visits by social workers bringing non-verbal interaction inducing gifts ("single intervention"), to offset the possible Hawthorne effect.

A rise was predicted in the intelligence of the Experimental Group after exposure to the intervening variable, and it was predicted also that the verbal and cognitive improvement would be greater in two year old than in three year old children.

Subjects

Characteristics

The subjects were 54 children, aged 20 to 43 months, at the time of pre-testing, and their mothers, in families where English was the predominant language, living in three Long Island low income housing projects, geographically separated by several miles from each other. (The top age limit was the highest available in children before encountering an age group almost uniformly enrolled in local nursery school programs.) The three housing projects are similar to each other in age, design, and physical comfort, all providing adequate shelter and other physical amenities. Thus the housing environment of the subjects was to a large degree equated, eliminating differences found by Pasamanick to be associated with behavioral development of infants[1].

The subjects were divided into three groups, an Experimental Group (to receive the verbal interaction stimulation) and two Comparison Groups (one to receive non-stimulating intervention, and one to receive none). The Experimental Group, numbering 33 children, comprised 92% of the total population of two and three year olds in the E Housing Project. The Comparison$_1$ Group (to be referred to henceforth as the C_1Group) included nine children, or 30% of the C_1 Housing Project two and three year olds. Comparison$_2$ Group (to be referred to as C_2Group) included 12 children, an unknown proportion of the housing project, since total tenant lists were not available from this project. It was conjectured that low income housing projects were likely to yield subjects in a low socioeconomic group.

Most of the subject dyads were observed to be Negro, by Gottesman's definition of this ethnic group as "a social and cultural one for the most part based almost entirely on skin color"[2]. No formal judgment was made as to the "race" of the subjects, as the mothers interviewed were not asked for a self-identification in this area, and the staff interviewers were not "required to make clinical judgments which a trained physical anthropologist would hesitate to make", as Gottesman notes of the task of United States census takers.[3] Such a judgment would indeed have been difficult, as the skin color of subjects ranged from very light, or apparently "white", to very dark, or apparently "black". On the basis of the informal observation of the interviewers, however, probably at least 90% of the dyads would be socially classified as "black" or "Negro".

This over-representation of Negroes in a subject group recruited from low-income housing projects is a not unexpected reflection of the general over-representation of such individuals in the country's low income group, as indicated by studies of Ornati[4] and Orshansky[5]. The genetic intellectual endowment of this (socially defined) ethnic group has occasionally been the subject of some controversy. Since the cognitive growth of the subjects was the focus of the research, it should be noted that Negro infant development has been observed to be similar to that of the rest of the population[6,7,8,9] except that Negro infants tend to score consistently higher in motor development, a superiority noted in all four studies cited.

As expected, with the exception of one family in Class III, the socioeconomic status of all subject dyads fell into Class IV or Class V (as measured on the Hollingshead Two-Factor Index of Social Position), with a high proportion of E dyads (82%) and C_1 dyads (78%) in Class V, as compared to less than half (42%) for the C_2 dyads. It is difficult to know whether the socioeconomic superiority of the C_2Group represented a general difference in the population living in the C_2Housing Project or was the result of self-screening due to necessarily incomplete recruiting procedures in that housing project.

Table I on page 5 summarizes the distribution of subject children and mothers by child's sex, age, and group. Note that since four E and two C_2 children were siblings, the total number of mothers is not equal to the number of children.

TABLE 1

DISTRIBUTION OF SUBJECTS BY GROUP, SEX, AND AGE OF CHILDREN

	Two Year Olds (20-31 months)				Three Year Olds (32-43 months)					
	Boys	Girls	Sub-Total		Boys	Girls	Sub-Total		Total	
E Children	10	7	17		6	10	16		33	
E Mothers				16*				13**		29
C_1 Children	2	2	4		4	1	5		9	
C_1 Mothers				4				5		9
C_2 Children	6	1	7		3	2	5		12	
C_2 Mothers				7				3***		10
Totals all children	18	10	28		13	13	26		54	
Totals all mothers				27				21		48

*One mother has two 2 year olds.

**Two mothers have a 2 year old and a 3 year old.
One mother has two 3 year olds.

***Two mothers have a two year old and a 3 year old.

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Recruitment

The good will accruing to Family Service Association of Nassau County, Inc. (the social agency sponsoring the Verbal Interaction Project) made it possible to obtain lists of potential Experimental and Comparison subjects and to gain access to almost all of the eligible tenants in the E Housing Project and to many such tenants in the other two housing projects. The groundwork was laid for enlisting the cooperation of mothers in all three groups by sending each prospective mother a letter inviting her to make an appointment for an interview with a staff member at a preliminary short visit. One of three trained and experienced social caseworkers then visited every mother to whom a letter was sent and enrolled her, when she was willing to do so, in the "Mother-Child Home Program", as the research project was known in the community, with the next step for each mother being an Initial Interview and Initial Psychological examination for herself and her child. The mothers in all three housing projects were told that the Program was testing out a new way of preparing children for school experience; but the mothers in the C_2Group were asked in addition for their cooperation in providing the program with the opportunity of observing the development of normal children through interviews and testing. It was hoped that motivation for this group would be given and sustained through engaging interest in the research goals, through payment of a fee for both pre- and post-testing, through provision of transportation and money for baby sitters where required, and through consistent staff attitudes of consideration and helpfulness.

The 54 subject dyads were those who actually remained with the research project for the total intervention period and through the completion of post-testing procedures. To recruit that number of "permanent" subjects, a total of 101 mothers were actually interviewed by means of the Initial Interview Schedules, and these interviews in turn were the results of many more introductory "door step" interviews or telephone calls seeking cooperation of subjects. Thirty-five subject children were eliminated because of age unsuitability (after reducing the original upper age limit from 4 to 3 years because of the discovery of the participation of four year olds in local nursery school programs), and 12 more subsequently withdrew or were dropped either from the intervention program or the post-test process. Of these 12, two in the C_1Group were found to be in non-English speaking families, and thus had to be eliminated from data analysis; two (siblings) in the E Group were withdrawn because of their father's objection to the children's receiving gifts unconnected with a special celebration; one child in the E Group was not available for post-testing after participation in the intervention program; and seven C_2 children out of an original 19 were not available for post-testing.

Although, as in the pilot study, it was hoped that all of the potential subjects would be motivated by a high value placed on preparation for formal education (the highest ranking criterion for prestige in this subject group[10]), only the eligible subjects in the E Housing Project were almost completely enrolled, in contrast to the other two groups. This difference in cooperation was not surprising, as the pilot study for the Verbal Interaction Project had taken place with E Housing Project families of the previous year, and word of its popularity with the subject families had spread throughout the housing project. Mothers in the other two housing projects were understandably cautious about entering a program with which they had no familiarity.

Interpretation of the program was necessary not only for the subject-mothers to be directly involved with it but also for the local community concerned with protecting the mothers from possible research exploitation. One such explanation involved meeting with a local Office of Economic Opportunity and most of its employees, both professional and non-professional, for an exposition of the need for "school readiness" research in general and for the evaluation of "double intervention" (home visits combined with verbal interaction stimulation) as compared to "single intervention" (home visits without such stimulation but possible conducive to attitudes functional for future school achievement).

Procedure

Preparation for Research

Preparations for research activity included hiring a staff of three graduate, experienced social caseworkers as Research Interviewers and one secretary-typist; planning and executing the many administrative details of establishing what was in effect a new branch of the Family Service agency; and planning and beginning the purchases necessary for the design of the research project.

General staff activity began with a two week Orientation Seminar conducted by the Project Director. The seminar included a grounding in the conceptual framework of the Verbal Interaction Project, intensive briefing on the design and rationale of the project, with interviewers' use of a selected library pertinent to the research. Training in the use of instruments for collecting data included role playing at several sessions. After the seminar ended formally, similar in-service training continued at weekly staff meetings for the rest of the research year. Staff functioning was excellent, with all members, clerical as well as professional, showing a high degree of responsibility and identification with the goals of the research.

Initial Data Gathering

After mother-child dyads had been recruited as subjects in the three housing projects, as described above under Subjects, the Research Interviewers visited their homes to fill out with them an initial interview schedule and to arrange for initial psychological testing of child and mother in the office of the Mother-Child Home Program. Several appointments sometimes had to be made in order for the staff member to complete the interview schedule and to complete the appointment for the psychological testing.

All psychological pre-tests were administered by the Project Director (an experienced and state certified clinical psychologist) at the Freeport office of the Program. A total of 72 mother-child dyads were tested (including subjects who were later eliminated from the research aspects of the Program for reasons given under Subjects), with C_1 and C_2 subjects transported to the Freeport office by the interviewers in order to provide the same testing environment for each subject. All mothers and children were given the Peabody Picture Vocabulary Test. Two year olds were tested on the Cattell Infant Intelligence Scale, three year olds on the Stanford-Binet. The office was arranged as a "prepared environment" with careful attention to the special problems of testing very young children. Every mother was present at her child's testing, and chairs were arranged so that mothers could be in actual physical contact with the child whenever this was indicated. The mothers acted as "testing assistants", translating when the child's verbal replies were occasionally unintelligible and providing emotional and physical support for the child while picking up the examiner's cues not to interfere with the actual testing. There was no difficulty in enforcing non-interference with any of the mothers, although a few were more persistent than others in attempts to help the child beyond permissible limits. The test procedure was expedited, with techniques used to involve the child's interest so quickly that almost all children yielded what appeared to be fairly reliable performances. The tests were introduced, and apparently perceived by the children, as "playing with toys", with the Wallin Boards used as the introductory "toy" for the two year olds and the Binet Form Board used in this way for three year olds. A few children cried with anxiety as they entered the testing room, but the attention of even these children was quickly captured by the introductory "toys" and was sustained until all the formal testing was completed. The mother was tested on the Peabody after the child's examination was over, while he was absorbed in free play with a toy chest full of attractive toys (no similarity to the Verbal Interaction Stimulus Materials) and usually holding a box of cookies "presented" by two dolls near the end of the testing. The test session appeared to be experienced as pleasant by all of the children, once initial shyness and anxiety was dispelled.

Experimental ("Double") Intervention with Experimental Group

By the middle of October, 1967, all preliminary interviewing and pretesting for 36 mother-child dyads in the E Housing Project was completed and the Experimental intervention was begun with this group. In two weeks this number was reduced to 34 because of the withdrawal of two siblings from the Program, on the father's initiative (as explained under "Subjects"). The Program continued with 34 dyads until shortly before it ended in May, when one child began a long visit away from home and was not available for posttesting, thus reducing the final N for the E Group to 33.

From the middle of October, 1967 until the middle of May, 1968, the professional staff visited the mother-child dyads in the E Group twice weekly, or as close to this number of visits as could be arranged by the mother, with the optimal number of visits set at 52, and the goal set for a minimum number of home visits at 28. These numbers were established by the actual number of weeks available during this time period, exclusive of school holidays, or 26, and the number of Verbal Interaction Stimulus Materials, or 28. The research interviewers brought the Verbal Interaction Stimulus Materials (to be referred to, as they were in the Program, as VISM) -- toys and books -- to demonstrate their use as a focal point for involving the mother in verbal interaction with her child, and to leave permanently with the child. The research interviewers in this role were called "Toy Demonstrators". This title was chosen to offset didactic connotations of their relationship with the mother, which was conceived to be that of peers working together as a team. Each of the three staff research social workers had responsibility for home visits to approximately 15 dyads, including 11 in the C_1 Group. Thus the intervention, or independent variable, had three major components -- the Toy Demonstrator, the VISM, and the verbal interaction stimulated by the Toy Demonstrator around the VISM.

Toy Demonstrator's Role

The personnel for making the home visits to stimulate verbal interaction between mothers and small children was chosen in the first year of research from the profession of social casework because it was felt that this discipline would provide intervention agents most functional, because of the values and skills of their profession, for optimal operation of the intervention. The aim of the investigation at this stage was to demonstrate the feasibility of the intervention itself with the possibility that, if it was successful, might be replicated with non-professional personnel.

The Toy Demonstrators were trained to have as a goal for every home session and for the total Program the mother's ultimate responsibility for the verbal and cognitive interaction with her own child. They used their professional skills to refrain from counseling or therapeutic intervention and for continuous observation and evaluation of the possibility of maintaining a friendly relationship with mothers without intervening in areas outside of the dilimited one of "toy demonstration". Since the Program was planned for future replication by volunteers or by paid neighborhood aides, they were continuously aware of their role in pioneering a new activity (perhaps even career route) for non-professional personnel without previously trained skills. Thus the research social workers refrained from activity outside of the capabilities of non-professional personnel and retained, as would non-professionals, their personal language styles. Within this framework, however, they used their professional skills, sensitivity, and warmth to exert a maximum effort in the home sessions. Major aims were to form relationships with both mothers and children functional to their Toy Demonstrator roles, to act as models for the mothers in interaction with their own children, to draw mothers into play sessions with their children from the beginning.

At mid-intervention the Toy Demonstrators reversed their initial procedure for each home visit which had been to take the initiative in verbal interaction with the child. They began at this point in the intervention to encourage the mother to start the play sessions with the child, with an explicit explanation to the mothers for the change in procedure in terms of encouragement of verbal expression from the child. At this point the staff members utilized the opportunity to verbalize their reinforcement of the mothers' sense of competence,[11] affective support which, it was felt, could be given in this manner also by non-professional Toy Demonstrators to build self-confidence and ameliorate depressed trends in the mothers.

Verbal Interaction Stimulus Materials (VISM)

The primary purpose of the VISM was to provide a focus meaningful to both child and mother in order to stimulate verbal interaction between them. It was also conjectured that the element of "play" would be a highly useful component of such interaction not only for utilization of its intrinsic motivation but because, as indicated by Sutton-Smith: "There is evidence to suggest that play, games and cognitive development are functionally related".[12] Although, as Sutton-Smith pointed out, the relationship is a loose one, not yet well researched, there seems to be a good possibility that the child's use of toys weighted with motoric features may foster the perceptual development necessary to verbal and cognitive growth. The motor behavior stimulated by the toys may well be conducive to the "reafference" described by Held as vital to perceptual adaptation through a feedback loop in which movements initiated by the child alter the sensory stimulation which he receives from the environment.[13] Just as Bruner theorized that enactive representation may be assisted by reafference,[14] it was thought that optimal development of this stage of representation through the use of toys by our Subjects might lay a good base for the "ikonic" (imagery) stage of representation which, in turn, when verbalized, shades naturally into symbolic modes of representation. Thus, in the intervention, the ultimate purpose of play and toys was to provide for the child a link between the world of action and the world of words, a link strengthened and extended through the accompanying use of illustrated books. But regardless of the validity of these guesses as to the intrinsic cognitive function of toys and books, both were considered to be the most traditionally tested and logical stimulus materials for verbal interaction between mother and child, to provide the "category availability" described by Brown to be essential to the Original Word Game.[15]

The choice of the specific toys and books to be used as VISM was believed to be of great importance. Not all materials so labeled are interesting to children or adapted to the purposes of the intervention. The 16 toys and 12 books chosen to be VISM filled a number of general criteria: all toys fed maximally into the developmental needs (and thus interests) of the ages served; the books were geared in content, illustration, and approach to the subjects' level and interests; the toys were richly endowed with features likely to elicit spontaneous sensory-motor activity; and above all, all VISM had many varied sensory attributes available for verbalization.

The rationale used in selecting the VISM was drawn not only from the professional and personal experience of the principal investigator (child psychologist, nursery school teacher, mother), but from the empirical studies of Lebo[16] and especially Moyer and Gilmer[17], who used the length of children's attention spans with experimental toys to measure the latters' "play value". Features of "successful" toys in this study were incorporated into VISM toy choices as far as possible. The counsel of Page[18] and of Montessori[19] was also incorporated in the choice of toys, with the latter's well known admonitions in the direction of sensory and motor "education" followed to a cautious degree as a guide to materials feeding the developmental needs and interests of children.

The VISM books were selected partly on the basis of the investigator's own previous professional experience as a teacher of children's literature and partly on the advice of individuals currently engaged in nursery school education. Special care was taken to choose books with large, clear illustrations, to provide an opportunity for development of the "representational competence" in which Sigel and McBane found low income children to be deficient,[20] a competence of some importance to the child's future school achievement.

Both toys and books had to fulfill criteria specific to the research sample and possible future replication as well as general standards: they were commercially available, for future replication of the Mother-Child Home Program under non-research auspices; they were well made and aesthetical;

content was ethnically and sexually "neutral"; they were not only durable, but safe, and presented relatively few practical problems for mothers (small or spillable parts); using them did not present an insuperable obstacle to the capabilities of either children or mothers. The same VISM, in the same order, were brought for every child in the Experimental Group, with materials for two and three year olds varying on some items to allow for the age difference.

Stimulation of Verbal Interaction

The Toy Demonstrators acted as models for the mothers in interacting verbally with the child around the VISM. Toys and books were brought in alternate weeks for VISM Sessions, with the second session of the week used to "review" VISM which had been brought previously. The general aim of the verbal stimulation was to translate the child's enactive and ikonic modes of representation (developed by the toys and books) into the symbolization embodied by words. To this end the Toy Demonstrators regularly applied techniques for enlarging the child's language experience out of the "restricted" code described by Bernstein[21] as characteristic of low income families. It should be noted, however, that at the age of two to three years a telegraphic style of syntax combined with a pivotal mode of adding new words to the vocabulary[22] is probably typical of most preschoolers, from whatever social status. Cazden has found[23] that conscious attempts at "expansion" of the young child's language are less effective than "modeling" -- that is, in effect, conversing with the child about the subject at hand. Thus it seems that low income children are on the threshold, like all children, of language increase to the "elaborated code" of the middle class, which will take place if there is enough verbal interaction with him by the Tutor in the Original Word Game. The subject "at hand" in the intervention was the VISM. In order to exploit their full possibilities as available categories for increasing language and conceptual ability, the Toy Demonstrators used conscious techniques in demonstrating the verbal interaction possibilities of the VISM and to "model" language interaction for the child and his mother.

The "modeling" technique used by the Toy Demonstrators to stimulate verbal interaction were divided into eight categories of verbal or verbally stimulating behavior, a compendium inspired by the recommendations of a number of investigators in the area of the relation of language to cognitive development. The first category of techniques was that of giving information, which included form, color, size, texture, naming, number, relationships, causality, and describing the child's behavior, areas suggested in need of emphasis in varying degrees by Bruner,[24] John and Goldstein,[25] Hess,[26] Lewis,[27] Sigel,[28] Gray etal,[29] and Wann, Dorn and Liddle.[30]

The second category of techniques was that of eliciting responses from the child by questioning, associating to the child's experiences, and inviting responses. Hess noted that in successful teaching of her child, the mother must "give opportunity for regular feedback from the child,"[31] a recommendation suggested also by John and Goldstein,[32] by Lewis,[33] and (implicitly) by Bruner in his comment that the process of language internalization depends upon interaction with others.[34]

For the third technique category the Toy Demonstrators described their own toy manipulation, which might be large or small muscle, activity, building, matching, fitting, creating sound patterns, or using skills specific to a particular toy. The child was encouraged to imitate the Toy Demonstrators' verbal descriptions. There was emphasis on verbalizing predictable sequences of activity and on capitalizing on the child's own self-initiated motoric activities as a base for his imitation of the Toy Demonstrators' or mother's descriptions. This technique utilized Jensen's recommendation that for the development of verbal mediation (between act and concept) "the child must see, hear, say, and do, all more or less at the same time".[35]

The fourth technique category reached into affective areas, since it included giving positive motivation, which Hess found to be of great importance in the mother's teaching of the child.[36] This observation, not too unexpected, was translated into verbal support of the child, urging his attention, helping him when appropriate. This category was closely linked to the next, which was verbalizing social interaction, in the form of inviting, directing, or cooperating.

The encouragement of reflection (the consideration of alternatives and consequences, with restraint of the child's impulsivity and redirection of his attention when necessary) and of divergence (independence, curiosity, difference, imagination) were the sixth and seventh technique categories used by Toy Demonstrators. Both had been noted as interacting with the restricted language code of low income families by Bernstein[37] and by Hess;[38] both techniques thus seemed functional to the development of the child's language and cognition, aside from value questions as to the social and personal desirability of encouraging thoughtfulness and creativity in children.

The eighth and last technique category related directly to the use of the books with the child, engaging the child's interest in the book, through holding the child close, pointing or other use of illustrations, eliciting verbalization around the story or illustrations, associating their content to the child's experiences, and -- of course -- reading aloud to the child with a flexible voice. Aside from serving as a rich source of category availability and, further, engendering favorable attitudes toward reading and books in general, it was believed that the books were important in the development of "representational competence."[39]

A global category, superordinate to the eight described, was that of classification, basic to conceptualization and permeating all of the Toy Demonstrator's verbal activity.

Each Toy Demonstrator was provided, ahead of each VISM toy session, with a list of the VISM's potential attributes in each category, (to be compiled into a Handbood of Toy Demonstrator Techniques), so that there was uniformity in all Toy Demonstrators' activity in home sessions. Although the Toy Demonstrators were thus highly self-conscious in the application of the technique categories and subcategories, little attempt was made until mid-intervention to make the mother explicitly aware of the techniques. There was almost no direct teaching of the mothers, but there were direct as well as indirect invitations to the mothers to join in the Toy Demonstrator's interaction with the child, with the Toy Demonstrator receding into the background as quickly in each session as her "demonstration" seemed to be over.

At mid-intervention, as described above, most of the mothers were given responsibility for beginning VISM sessions with their children, with the Toy Demonstrators joining in the session later, as the mothers had done previously.

Non-Stimulating Intervention with C_1Group ("Single Intervention")

To minimize the probability of a Hawthorne or "halo" effect on the E Group of a positive response to the visits, gifts, and interested attention of the Toy Demonstrator (quite apart from other aspects of the intervening variable), the C_1Group was also exposed during the intervention period to weekly visits by a research social worker. This staff member demonstrated the same friendly attitude to the C_1Group as she did to the four E dyads she had in her charge, and she showed her interest by asking the mother weekly the same questions about major family happenings as she did in the E Group. But the gift she brought for the child (with duplicates for siblings under 7 years, to equalize the variable of E siblings being able to play with the subject's VISM) was not a toy or book, and her activity was sitting quietly in the same room with the child, deliberately avoiding verbal interchange with him, and helped in this difficult enterprise by the use of children's records on a portable phonograph. Mothers were not required to be present and were indeed encouraged to take a rest away from the children during the weekly half-hour visit.

This treatment of the C_1Group was identified to the community as "single intervention", since the visits of the staff member was the factor possibly most relevant to the child's cognitive growth.

Ongoing Data Gathering

On a regular basis, four kinds of quantitative data were collected from the E Group during the seven month intervention period, and two kinds were collected from the C_1Group. Records were kept on the E Group of the kind and quantity of verbal interaction stimulated and observed during every home session, and of the kind and amount of intersession play activity with the child reported weekly by the mother. Records were kept for both groups on the kind and quantity of interpersonal attitudes observed during home visits and on major life events occurring in the family, as reported weekly by the mother.

Informal anecdotal notes were inserted into the records of both groups with timing spaced at the discretion of the staff research social workers. Similarly, a cumulative Progress Rating on each E child's session behavior was kept, with items checked at dates when behavior was noted to be sufficiently present to indicate beginning skill or mastery. The items covered in this Rating were all derived from the session records of verbal interaction activity.

Final Data Gathering

By the middle of May, 1968, all home sessions were completed, and final data gathering began. This included Final Interviews with all subject mothers and post-testing of all subjects on the original cognitive standardized instruments.

The collection of post-intervention data was completed by the middle of June, 1968.

The Final Interviews included questions for all three subject groups to get information on events occurring in the families during the intervention period, the mothers educational and occupational aspirations for her child, and the child's attendance in nursery school. E and C_1 were asked about attitudes toward the intervention used with their groups. In addition, mothers in the E Group were questioned as to their interpretation of the effect of intervention on their children and of their roles in the intervention; they were also asked their opinions of the VISM and of the activity of the Toy Demonstrators.

The post-intervention test sessions with the mother-child dyads were conducted in the same manner as the pre-testing, with the addition of the tape recording of every post-test session in randomized positions on pre-prepared tapes. The tape recorded sessions were identified only by the date and the subject's name; judges drawn from the fields of psychology and child development were then asked to listen to the test sessions and to make a judgment from the examiner's treatment of the child as to the child's membership in the E or C Group. This procedure was followed in order to identify the presence of unconscious bias in the examiner which might influence the subject's post-intervention test functioning and thus the final effect of the intervention as seen in the post-test scores. The procedure was supported by Rosenthal's observation regarding the sound filming of an experimenter's instructions to subjects, that the experimenter's bias, which influenced the subjects' later performances, was apparent to judges from the sound track of the film alone.[40]

Materials

Measuring Instruments: Standardized

1. The Cattell Infant Intelligence Scale was used to measure the general cognitive development of children who could not pass all tests at the two year level of the Stanford Binet. It was chosen because it is the downward extension of the Stanford Binet, is comparable with the Binet, and thus could be used on post-testing when the child had, for developmental or intervention reasons, outgrown the Cattell during the intervention period.
2. The Stanford-Binet Intelligence Scale (Third Revision) was used to measure the general cognitive development of children whose mental age was two years or above. Both the Binet and the Cattell were mentioned by Stott and Ball as being the most frequently used mental tests with infants and young children.[41]
3. The Peabody Picture Vocabulary Test was used to measure the verbal intelligence of both children and mothers, since the norms range from less than two years to adult age.

Measuring Instruments: Non-Standardized

1. A VISM Session Record contained a listing of every category and subcategory of verbal interaction techniques demonstrated by the Toy Demonstrator (described earlier under "Stimulation

of Verbal Interaction"), with a repetition of the same list under the heading "Techniques Used by Mother" and a third list of categories and subcategories of the child's verbal and non-verbal behavior. The third list pertaining to the child was designed to record the child's response to the Toy Demonstrator's or mother's verbal activity with him. Eleven categories and their subcategories were named under "Child's Behavior".

a. Verbalizes information (form, color, size, texture, naming, causality, relationships, number, describes own behavior with toy).

b. Non-verbal communication of information (vocalizes, recognizes uses or concepts, gestures, follows cues).

c. Responds verbally (imitates, answers, converses).

d. Speaks (vocalizes, soliloquizes, questions, initiates conversation, narrates, describes).

e. Demonstrates adequate concentration (listens, focuses visually, hyperactivity, distractibility, appropriate attention shift).

f. Shows divergence (investigates, experiments, differs, dramatizes roles, initiates independent play).

g. Shows positive motivation (interest, pleasure, joy, efficacy).

h. Manipulates toy (uses large and small muscles, builds, matches, fits, specific motor skills, creates sound patterns, manipulates inappropriately, takes apart, takes care of).

i. Interacts socially (complies, initiates, cooperates, plays with, plays alone, helps).

j. Shows interest in book (listens, verbalizes, associates, stays close as listens, shows appropriate activity).

k. Accepts toy introduced (looks at, holds, verbalizes pleasure, indicates pleasure, plays with).

The rationale for inclusion of categories and subcategories came from the work of Bernstein,[42] Biber and Franklin,[43] Bruner,[44] Deutsch,[45] Gallagher,[46] Hess,[47] Jensen,[48] John and Goldstein,[49] Kendler,[50] Lewis,[51] Murphy,[52] Sigel,[53] and Sigel and McBane.[54]

At the conclusion of each home session, the Toy Demonstrator rated herself, the mother, and the child on the prominence of presence of each of the categories, and she marked the presence of the subcategories during the session. (After training, before intervention, interjudge reliability of 85% within one step upon any scale, category or subcategory, had been reached among staff.) An attempt had been made at the beginning of intervention to rate subcategories in amount of presence, but this was soon abandoned in favor of collecting the frequency of subcategory presence because of the impracticality of the form of procedure. A means was taken at the end of the third session, fifteenth session, and the end of intervention for each child's categories rating during the period covered.

2. A Cumulative Progress Rating Sheet was kept on each child to note his beginning skill or mastery on most of the subcategories listed on the VISM Session Record. The number of subcategories checked was his score at the end of the intervention.

3. Ratings of interpersonal attitudes were recorded at each home session for E and C_1 Groups, and means were taken of these ratings at the end of the intervention period.

4. An experimental Mothers Self-Rating Scale was filled out by mothers before and after intervention.

Data Gathering Instruments

1. An Initial Interview Schedule organized background information on the child and his parents, including the child's age, sex, birthweight (to identify the prematurity thought to be correlated with lagging cognitive performance by Knobloch and Pasamanick);[55] length of mother's labor in childbirth (with prolonged or precipitous labor found by Hoopes to be associated with lowered IQ after infancy);[56] parents' education and occupation; mother and child's outside activities; grandparents'

education, occupation, and presence in the home; fathers' presence in the home; whether parents were raised in the South (as defined by Equality of Educational Opportunity);[57] the sex, age, and school grade of siblings at home; the sources of cognitive stimulation noted in the home; and other languages spoken to the child besides English. This information was gathered from all three groups by the research social workers at the time the mother and child were enrolled in the Mother-Child Home Program.

2. A weekly record of major life events occurring in the families of E and C_1 subjects was taken from the mother by her home visitor.

3. A weekly record of family play interaction with the E child between home sessions was reported by the mother to the Toy Demonstrator, covering the child's intersession activity with his father, siblings, and any others in the home.

4. At mid-intervention each E and C_1 mother was asked to fill in an Anonymous Evaluation of the Mother-Child Home Program. Twenty-three of these were received from the E group and eight were received from the C_1 Group. No attempt was made to quantify these.

5. A Final Interview Schedule was filled out for every subject mother by the research social workers.

Verbal Interaction Stimulus Materials (VISM) and Non-Stimulating Gifts (Non-VISM)

1. Sixteen toys were presented bi-weekly to each E child. Their general properties have been described under Procedure. Specifically, each toy had the first and several additional of the following features:

    a. Verbal: should permit, encourage, or require verbal interaction.

    b. Motor: weight and size suited to age; possibility of large muscle activity of pushing, pulling, lifting, banging; possibility of such manipulation as rolling, rocking, fitting parts; challenge to fine muscle dexterity; training for specific motor skills; outlet for motor skills.

c. Perceptual: strong primary and secondary colors; color discrimination; size discrimination; presence of simple geometric shapes in variety but not confusion; form fitting; possibilities for special organization; possibilities for simple sound stimuli when manipulated by child; attractive and varied tactile qualities.

d. Conceptual: stimulation of imaginative play; possibility of several imaginative uses; challenge to problem solving; purpose comprehensible and interesting to child; self-rewarding activity; possibility of beginning social concepts; organization of percepts into concepts or classes.

e. Physical properties: safety; durability; no problems for mothers.

f. Emotional: offers sense of mastery and competence leading to self-esteem; offers possibilities of identification with parents; outlet for aggression or anxiety; not anxiety arousing.

g. Cultural: ethnic neutrality; sexual neutrality; wide cultural appeal if possible.

2. Twelve books were presented, alternating with the toys, to each child. The criteria for their selection has already been described under Procedure.

3. A toy chest to keep the VISM was presented to each child.

4. Small gifts of cookies, candy, and attractive articles were presented weekly to each C_1 child and all of his siblings under the age of seven years.

Technical Equipment

1. A tape recorder was used to record the post-intervention test session.
2. Four small, portable tape recorders were used to record home sessions with every mother-child dyad during the intervention.

Data Management

Raw data on each mother-child dyad, collected by means of the instruments described above, was filed in folders under each child's name. It was then coded and entered on large (8" x 10") "McBee" cards (Appendices A, B, C, D), four for each of the E dyads, three of these four for each C_1 dyad, and two of the four for each of the C_2 dyads. From these cards the data on subjects was tabulated and analyzed statistically for the results to be described.

III. PROGRESS IN SECOND YEAR 1968 - 1969

Introduction

With what appeared to be a successful outcome (pending follow up study) of the first year's cognitive intervention program, we turned our attention to investigating the possibilities of producing similar results with personnel not professionally prepared for home based cognitive intervention. The Second Year phase of the Verbal Interaction Project is a replication of the first year's program (with minor changes in some of the VISM) to measure the effect on cognitive growth of the preschool subjects of paid and unpaid Toy Demonstrators trained and supervised by the professional staff who pioneered the role during the first year of study.

Two additional factors are being explored. One is the reinforcement of the First Year's intervention through various versions of continuation of the cognitive program with the 1967 - 1968 Two Year Olds, now three years of age. The other addition to the research is a pilot study to investigate the use of the Mother-Child Home Program with Spanish speaking dyads.

Analysis of the First Year data is continuing to identify variables associated with High and Low cognitive gain in the Experimental Group, and other questions raised under Results.

Subjects

Mother-Child Dyads in E Housing Project

New subjects entering the program for the second year, 1968 - 1969, in the E housing project comprise the total population of children who have become two years old since last year's subject selection, a total of 17 of these dyads. In addition, two three year old children who moved into the housing project during the course of the first year program and too late to make their presence known in order to enroll are also being included. Also, in an experimental relaxation of last year's methodological necessity of including only children from the housing project in the Mother-Child Home Program, a two year old living across the street from the E Housing Project and her mother are also being included.

"Old" two year old subjects from the first year of the program, in 1967 - 1968, who are now three years old, are subjects for reinforcing intervention. There are 18 of these dyads.

Subjects who were three years old in the first year of intervention and are now aged four are to receive no reinforcing intervention, beyond a telephone call to their mothers in order to learn the children's plans (for example, nursery school) for the coming year and to encourage the mothers to continue their verbal interaction activity with their children.

Mother-Child Dyads in C_1 Housing Project

During the First Year of the Verbal Interaction Project mother-child dyads from the C_1 housing project were enrolled only in the "single intervention" aspect of the Mother-Child Home Program, receiving non-verbally stimulating home visits from the social worker. Currently, 20 mother-child dyads from this housing project have signified their willingness to be enrolled for the full cognitive intervention aspects of the Mother-Child Home Program, including assignment of VISM and the home session.

Of these there are nine "new" two year olds and their mothers from English speaking families, and one from a Spanish speaking family.

Mother-child dyads who were enrolled in the "single intervention", non-stimulating First Year program have been invited into the full Mother-Child Home Program for the Second Year, with the mothers being given the choice of receiving assignment of VISM for their children, with no home sessions, or the full intervention of home sessions and assignment of VISM. These families total 10 in all, including one Spanish speaking family (child not included in First Year data analysis).

Non-Professional Toy Demonstrators

Six mother participants in the first year of the intervention are paid Toy Demonstrators during the second year of the research.

Thirteen women living in the Long Island community have volunteered their services to Family Service Association to be unpaid Toy Demonstrators during the second year of research.

Procedure: Pre-Intervention

Recruitment of Mother-Child Dyads

Complete lists of the tenants in both the E and C_1 Housing Projects were obtained from the respective managements, and a letter was sent near the end of August, 1968, to every tenant in both housing projects to announce the continuation of the Mother-Child Home Program for a second year and to invite all eligible mother-child dyads to participate. The letters were followed up with personal telephone calls and visits to every family in which children's ages on the tenants list indicated eligibility for participation in the intervention program. As occurred during the period of subject recruitment for the first year's program, reception of staff interviewers was good in the E Housing Project and less enthusiastic in the C_1 Housing Project. To our knowledge, every two year old child and his mother in the E Housing Project is now enrolled in the Mother-Child Home Program, with mothers looking forward to participation in the program with interest. More preliminary visits to encourage enrollment in the program have been necessary in the C_1 Housing Project, but a total of about 31 mothers (as described above under subjects) have agreed to participate in the second year program. Recruitment will not be complete until all subjects have been interviewed and tested. This process has been completed for the E Housing Project dyads, not yet for the C_1 Housing Project.

Recruitment and Training of Non-Professional Toy Demonstrators

Recruitment of the non-professional Toy Demonstrators began in late August, 1968, at about the same time as subject dyad recruitment was started.

As part of the final interview which ended the program's contact with mother participants of the first year, all mothers had been queried as to willingness to be paid Toy Demonstrators on a part-time basis during the second year. Almost every mother had expressed an unusually enthusiastic wish to become a Toy Demonstrator during the second year, and all of these mothers were contacted by telephone or personal visit to invite them to work in this way in the second year program. But only six of the 29 mother-participants from the first year were able to follow through in accepting this invitation.

The six former mother-participants were interviewed by professional staff and accepted as research project employees when it was ascertained that they met the simple criteria established for position: no gross deviations in physical or mental health; interest in the program and an expressed commitment to continue employment with it until the end of the intervention in May, 1969; ability to keep the time commitment involved for training, supervision, and work, as far as could be foreseen; and what appeared to be a non-destructive attitude towards children and mothers. Each agreed to be paid on an hourly basis, the total weekly sum to be determined by the number of dyads assigned to each paid Toy Demonstrator, and with salary to be paid for time spent in training and supervisory sessions. Because of difficulties in arranging transportation, it was decided to assign the paid Toy Demonstrators to dyads in the E Project, and all were made aware of this arrangement from the beginning.

Community volunteers were recruited by the Volunteer Department of the Family Service Association, starting at about the beginning of September. Prospective volunteers were given a description of the Mother-Child Home Program at a general Orientation Session and invited to apply for participation as Toy Demonstrators in the program. Applicants were then interviewed for their ability to meet the same general criteria established for the paid Toy Demonstrators, and a total of 13 were thus recruited.

Both paid and unpaid second year Toy Demonstrators were then exposed to an eight session Training Program during the month of October (not yet completed, as of the writing of this report). A syllabus for the Training Program was written by staff, providing for the first three sessions to be devoted to a general description of the Mother-Child Home Program, the need for such research, and the relation of language to cognitive growth; the last five Training Program sessions were scheduled to be devoted to actual training in the use of VISM in stimulating verbal interaction in the mother-child dyads, with attention also to more general problems of working in a relatively intimate relationship with families in their homes. Such issues as confidentiality, reliability, and use of the program offices and supervision were emphasized. (The experience of other agencies in the use of non-professional personnel was studied and drawn upon, as appropriate.) The duties specific to the job of Toy Demonstrators were described concretely and repeatedly. The eight sessions of the Training Program were taught by the two research social workers as a team. The principal investigator participated in the Training Session as a resource professional. Some lecturing supplemented discussions and role playing during the sessions, and considerable use was made in each session of films on child development and tape recordings made during the first year of research of home sessions and interviews with mother-child dyads.

At the present date, with half of the Training Program completed the paid Toy Demonstrators have a record of perfect attendance, and attendance by most of the volunteer Toy Demonstrators has been equally good, with only one drop-out in the latter group, caused by the emergency illness of a family member.

Initial Data Gathering

Initial data gathering has been completed with mother-child dyads in the E Housing Project, including initial interviews, the completion of a revised experimental mother's self rating scale, and psychological testing for mother and child as in the first year.

Mother-child dyads in the C_1 Housing Project are awaiting psychological testing, which will be completed before the beginning of intervention in November.

Another kind of initial data already becoming available are the evaluations of each Training Session filled out by Toy Demonstrators participating in the session.

Procedure: Intervention Planned for November 1968 - May 1969

E Housing Project

Former mother-participants in the Mother-Child Home Program will be paid Toy Demonstrators in the E Housing Project, visiting new subject dyads and replicating last year's stimulation of verbal interaction between mother and child, focusing around the verbal interaction stimulus materials, or VISM (toys and books). Since they will be visiting homes in their own housing project, they will be assigned dyads who are not friends, relatives or neighbors. Those who have two year old children of their own, and are thus eligible for the program, will act as Toy Demonstrators for themselves, in effect, being paid for training and supervision but not for sessions with their own children. The paid Toy Demonstrators will meet weekly for a Toy Demonstrator Conference, that is, group supervision, in the Program's office in the E Housing Project. Supervision will focus in two broad areas: discussion of each Toy Demonstrator's experiences with her subject dyad or dyads, using the record forms to be described under Materials; and preparation for the Toy Demonstrator's introduction of the next VISM, including the discussion of a page of instructions in regard to the VISM, to be collected week by week into a loose-leaf note book which will, at the end of the intervention, constitute a Handbook of Toy Demonstrator Techniques. These instructions for the non-professional Toy Demonstrators are based on a similar but more technical handbook compiled during the first year of intervention for the use of the professional staff serving as Toy Demonstrators.

Professional staff members will conduct a limited version of the Mother-Child Home Program for reinforcement purposes with "old" two year olds, now three in the second year, 1968 - 1969. Mothers in this group have had a choice of either receiving the VISM with no home visits, or having a staff member visit once a week, alternating VISM with review sessions. The two sub-groups thus formed will then be contrasted in follow-up with the "old" three year olds, now four years of age, who are receiving no reinforcement.

C_1 Housing Project

The unpaid Toy Demonstrators will replicate the first year intervention program in the E Housing Project by visiting the new subjects or the former English speaking C_1 Group subjects in the C_1 Housing Project. As with the paid Toy Demonstrators, the unpaid Toy Demonstrators will meet for one of the two weekly Toy Demonstrator Conferences for group supervision at the C_1 Housing Project. The weekly supervisory conferences will be conducted in the same way as with paid Toy Demonstrators, with whatever additional teaching is necessary in understanding the life style of the dyads visited in their homes. This group will be equipped with the cumulative Handbook of Toy Demonstrator Techniques, as described above.

Both paid and unpaid Toy Demonstrators will receive individual supervision as needed, with professional staff members available for telephone calls or personal conferences, between the group supervisory sessions.

The professional staff members, as research social workers, will be responsible for Toy Demonstrator duties with Spanish speaking dyads in the C_1 Housing Project (there are currently none in the E Housing Project), replicating the first year design for cognitive intervention in a pilot study to explore the most appropriate way of handling the language problem in these families, including communication with mother and child. The current aim is toward conducting sessions in English (thus perhaps teaching English to the mother and child as the program proceeds), or using volunteer or paid translators in the VISM and review sessions.

Ongoing Data Gathering During Intervention

In place of the complex VISM Session Record completed on every VISM and review session by research social workers acting as Toy Demonstrators in the first year, necessary for the identification, evaluation, and statistical analysis of intervention variables during this phase of the research, all Toy Demonstrators will fill out a simple Session Record of the mother's report of the frequency of major life events and of verbally oriented play activity conducted during sessions with the child. The Toy Demonstrator's comments on each session entered in these records will form one basis for weekly group or individual supervision. Supervisors will enter these comments on the records for any Toy Demonstrators who do not feel ready to do so themselves.

Each Toy Demonstrator will keep a cumulative record of VISM assigned to each dyad, with the mother's signature for the receipt of each VISM.

Tape recordings will be made on the Toy Demonstrator Conferences with both paid and unpaid Toy Demonstrators as a basis for discussion in weekly professional staff meetings (and for future demonstration of the Program). During the first two months of intervention and supervision of the nonprofessional Toy Demonstrators, the staff supervisors of the Toy Demonstrators will keep informal written supervisory notes. These will then be analyzed for identification of categories to be incorporated into a formal instrument for ongoing evaluation of Toy Demonstrator activity.

Periodic tape recordings will be made of home sessions with selected dyads. There will also be some exploration of the possibility of filming such sessions, if equipment and technical assistance can be borrowed for such pilot visual records.

Materials

Measuring Instruments: Standardized

The intelligence tests used in the first year of research are again the measuring instruments for cognitive growth. These are the Cattell Infant Intelligence Scale; the Stanford-Binet Intelligence Scale, Third Revision; and the Peabody Picture Vocabulary Test, the latter to be used for both children and their mothers. Both of the other instruments are for the children only.

Measuring Instruments: Non-Standardized

A Cumulative Progress Rating on each child will be kept by the non-professional Toy Demonstrators, with a score derived from these ratings at the end of the intervention.

Each subject-mother has filled out a revised form of an experimental Mother's Self Rating Scale, devised by the principal investigator and administered pre- and post-intervention during the first year of research. This instrument is still of only heuristic value; data analysis on results on this scale during the first year has not yet been completed.

Other Data Gathering Instruments

An initial interview schedule of Background Variables has been filled out by the research social workers on every subject dyad, using the same form as that used in the first year, with the addition of including a Home Rating and the mother's judgment of the child's health status.

Toy Demonstrators will fill out a Session Record at each home session of the mother's report of major life events in the family and of intersession verbally oriented play activity with the child. This form will also include space for comments by the Toy Demonstrators.

At the end of the training program Toy Demonstrators will be asked to fill out an anonymous evaluation of the Training Program.

A final interview schedule, still to be constructed, will be used after the intervention for information gathered from every subject mother.

Verbal Interaction Stimulus Materials (VISM)

At the end of the intervention in the first year so many mothers suggested reduction of the number of toys, confirming staff impressions in the same direction, that last year's VISM list was scaled down for the Second Year's intervention with two year olds to 12 toys and 11 books, replacing 16 toys and 12 books. Material found to be unpopular with the subject dyads has been eliminated. Some of the substitutes were made from the VISM used with three year olds during the first year, when it was discovered that certain VISM were equally popular with two year old siblings. Most of the VISM for this year's reinforcement of three year olds were taken from the First Year VISM list for three year olds. The VISM list for the second year has not yet been firmly established, beyond the first ten items. It should be noted that the VISM list for the first year of intervention was also kept open ended for the first two or three months of intervention in order to allow time for a continuing survey of the materials available for the age group served.

Technical Equipment

As in the first year of intervention a stationary tape recorder (Wollensak) will be used for keeping recorded material on permanent long playing tape, and small portable cassette-type tape recorders will record staff meetings, Toy Demonstrator Supervisory Conferences, and home sessions. As indicated above, it is planned to borrow equipment and technical assistance for filming some home sessions and perhaps other activity of the research project.

Data Management

As in the first year of intervention, data gathered will be coded and entered on large (8 x 10 inches) "McBee" sorting cards. Data from subject groups treated by paid and unpaid Toy Demonstrators, as well as Spanish speaking families visited by the research social workers, will be compared for the effectiveness of the respective treatment for each group in terms of the cognitive growth of subject children. Comparison will also be made of the background characteristics of all subject dyads for measuring similarities among the groups. The two groups of Toy Demonstrators, paid and unpaid, will be compared in a similar way.

B. THE VERBAL INTERACTION PROJECT: RESULTS

Tables 2 through 19, to follow, contain the data collected and analyzed to explore the confirmation or lack of support for the two hypotheses under investigation.

1. The general and verbal intelligence of low income two and three year old children will rise in children exposed to home based stimulation of verbal interaction between them and their mothers.
2. The IQ rises will be greater among the two year old children than among the three year old children.

The distribution of the subjects by group, sex, and age has already been presented in Table 1 on page 5. The collection of data for this and all tables began in August, 1967, with the preliminary interviewing and testing of all subject dyads, and was completed in June, 1968, with post-intervention interviewing and testing of the subjects.

In the interest of conciseness, each table will be discussed separately at first, since each represents a distinct and related set of variables. The tables and discussion will be organized to lead logically through the findings of the investigation. A Summary of Major Findings will follow at the end of this section.

Findings

TABLE 2 -- INTELLIGENCE TEST MEANS, ALL SUBJECT GROUPS

Test Scores before Intervention Period (Pretest)

On general intelligence (as measured by the Cattell and Stanford-Binet Scales) the Experimental (to be designated henceforth as E) and Comparison (to be designated as C) Group children started off at about the same level, with no significant differences among them. But the C_2 children had a higher actual IQ mean on the pretest.

On verbal intelligence, the children in both C Groups started off at a higher IQ than that of the E Group, significantly so in the case of the C_2 Group and in the case of both C Groups combined.

Mothers' pretest scores showed no significant differences among any of the groups, although the mean for the E mothers was lower than that for mothers in either of the C Groups.

Test Scores after Intervention Period (Post-Test)

After the experimental intervention the E Group children's general IQ arose above that of both C Groups, but the difference was statistically significant only for the C_1 Group and for the C Groups combined. The lack of a significant difference in comparison with the C_2 Group's mean was caused by the fact that the C_2 Group's pretest mean was higher than that of either of the other two groups.

Similarly, the post-intervention verbal scores were highest for the E children, but the E scores were significantly higher only than those of the C_1 Group. Again, as with general intelligence, the C_2 Group started off with a higher verbal intelligence. The considerable rise of the E children's verbal intelligence was parallelled by a rise in that of the C_2 children which was modest but sufficient to prevent a large post-test difference between the post-test verbal scores of the E Group and C_2 Group, although the post-test difference between the E and C_1 Groups was significant at the .05 level.

TABLE 2

INTELLIGENCE TEST MEANS, ALL SUBJECT GROUPS
(Cattell = C, Stanford-Binet = S-B, Peabody Picture Vocabulary Test = PPVT)

Test	E	E	C_1	C_1	C_2	C_2	C_1+C_2	C_1+C_2	Diff. $E-C_1$	Sig.	Diff. $E-C_2$	Sig.	Diff. $E-C_1+C_2$	Sig.
	$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$	N	t*		t*		t*	
Pretest														
Child - C or S-B	84.9	33	87.4	9	92.0	11	90.0	20	.62	N.S.	1.92	N.S.	1.65	N.S.
Child - PPVT	76.8	29	82.6	9	84.1	10	83.4	19	1.93	N.S.	2.12	$p < .05$	2.43	$p < .05$
Mother - PPVT	82.5	26	86.0	9	87.8	10	86.9	19	.55	N.S.	.88	N.S.	.93	N.S.
Post-Test														
Child - C or S-B	101.9	33	88.4	9	94.0	11	91.5	20	2.55	$p < .05$	1.66	N.S.	2.79	$p < .01$
Child - PPVT	89.0	29	78.6	9	88.8	10	83.9	19	2.13	$p < .05$	.04	N.S.	1.29	N.S.
Mother - PPVT	84.2	26	82.8	9	87.5	10	85.3	19	.29	N.S.	.61	N.S.	.25	N.S.
Change														
Child - C or S-B	+17.0	33	+1.0	9	+2.0	11	+1.5	20	4.03	$p < .001$	4.08	$p < .001$	5.29	$p < .001$
Child - PPVT	+12.2	29	-4.0	9	+4.7	10	+.6	19	3.51	$p < .01$	1.48	N.S.	2.94	$p < .01$
Mother - PPVT	+ 1.8	26	-3.2	9	- .3	10	-1.7	19	1.3	N.S.	.65	N.S.	1.21	N.S.

*Two-tailed test

As on the testing before intervention, there was no significant difference among the mothers' post-intervention verbal IQ scores. But the E children's verbal intelligence arose above their mothers' after intervention, while the C_1 children dropped below their mothers in verbal intelligence. C_2 children also arose above their mothers in verbal intelligence after the intervention period, but to a very small degree.

Change in Intelligence Scores after Intervention Period

As predicted, there was a dramatic positive change in the general intelligence of the E children after intervention. The E Group's mean gain of 17 IQ points was significantly higher (at the .001 level on a two-tailed t test) than that of one point for the C_1 Group and two points for the C_2 Group.

The prediction of a rise in verbal intelligence for the E Group children was also confirmed, although not so markedly. The E Group mean gain of 12.2 IQ points was significantly higher (at the .01 level) than the C_1 Group's loss of four points but no higher than chance over the 4.7 mean gain of the C_2 children.

There was no significant difference between the small gain in the verbal intelligence of the E mothers after intervention and the small loss in the verbal scores of the C_1 and C_2 mothers.

The hypothesis that the experimental intervention would produce a rise in both the general and verbal intelligence of the preschool children exposed to it is confirmed.

The question of whether the intervention had any effect on the verbal intelligence of the mothers is answered in the negative.

TABLE 3 -- INTELLIGENCE TEST MEANS OF TWO AND THREE YEAR OLDS, E GROUP

There were no significant differences among the pretest general or verbal intelligence IQ's between two and three year old children in the E Group.

The general and verbal intelligence of both two and three year olds in the E Group arose after exposure of this group to the experimental intervention, but there was no significant difference between the post-test means of the two age groups.

There was no significant difference between the verbal IQ's of the mothers of the E children in the two age groups on testing before or after the intervention.

The hypothesis that the age of two years would prove to be the critical period for cognitive intervention is not borne out by the findings. It appears that intervention at any point at least between the ages of 20 and 43 months -- the age period investigated by the study -- will yield equally benign results.

TABLE 4 -- CHARACTERISTICS OF SUBJECT GROUPS (MEANS)

Inspection of Table 4 suggests that the three subject groups were similar to each other in the ages of the children and the ages of the mothers.

The fathers in the C_1 and C_2 Groups were younger than those in the E Group, though not to a marked degree.

The education of both parents in the E and C_1 Groups was almost exactly the same, but C_2 mothers were a school grade higher than E mothers, and C_2 fathers were a little more than one school grade higher than E fathers.

Families in the E Group were larger than those in either of the other two groups, including numbers of siblings. Again, differences were more marked for the C_2 Group than for the C_1 Group.

Thus, although some differences were demonstrated among the subject groups, the differences tended to be in favor of the C Groups, especially C_2, in terms of factors usually considered positively associated with children's learning: higher education of both parents and smaller families. Generally, however, Table 4 demonstrates more similarity than difference among the three subject groups.

TABLE 3

INTELLIGENCE TEST MEANS OF TWO AND THREE YEAR OLDS, E GROUP
(Cattell = C, Stanford-Binet = S-B, Peabody Picture Vocabulary Test = PPVT)

			Pretest			Post-test			Change		
E Subjects	N	Psych. Test	$\bar{X}$	t	Diff. (2 & 3 yrs.)	$\bar{X}$	t	Diff. (2 & 3 yrs.)	$\bar{X}$	t	Diff. (2 & 3 yrs.)
2* year olds	17	C - S-B	83.24			100.82			17.59		
3** year olds	16	C - S-B	86.75			103.13			16.38		
2+3 year olds	33	C - S-B	84.94			101.94			17.00		
2 year olds compared to 3 year olds				.94	N.S.		.44	N.S.		.32	N.S.
2 year olds	13	PPVT	79.50			87.62			9.08		
3 year olds	16	PPVT	75.38			90.13			14.75		
2+3 year olds	29	PPVT	76.79			89.00			12.21		
2 year olds compared to 3 year olds				1.12	N.S.		.52	N.S.		1.24	N.S.
Mothers of 2 year olds***	14	PPVT	86.87			85.87			-1.00		
Mothers of 3 year olds***	14	PPVT	78.67			82.93			4.27		
Mothers of 2+ mos. 3 years	26	PPVT	82.77			84.40			1.63		
Mothers of 2 year olds compared to mothers of 3 year olds				.80	N.S.		.04	N.S.		1.41	N.S.

*2 year olds = children 20-31 mos.
**3 year olds = children 32-43 mos.
***Mothers with 2 children counted once

TABLE 4

CHARACTERISTICS OF SUBJECT GROUPS(MEANS)

Characteristics	E Group (N=33)		C_1 Group (N=9)		C_2 Group (N=12)	
	$\overline{X}$	Range	$\overline{X}$	Range	$\overline{X}$	Range
Child's age in months	31.9	20-43	33.9	26-42	31.5	21-42
2 year olds	25.9	20-31	27.7	26-30	26.1	21-31
3 year olds	38.2	32-43	39.2	37-42	39.0	36-42
Mother's age	28.6	18-46	28.3	23-35	26.8	21-32
Father's age	31.2	19-52	29.0	25-33	27.3	22-34
Mother's education	10.8	6-14	10.7	7-12	11.8	11-12
Father's education	9.7	4-13	9.8	8-12	11.2	8-14
Total in family beside subject	5.1	2-9	4.8	3-8	4.0	3-7
Total younger sibs	.7	0-2	.4	0-1	.3	0-1
Total older sibs	2.1	0-7	1.7	1-3	1.4	0-3
School age siblings	1.8	0-7	1.3	0-2	1.2	0-4

TABLE 5 -- PROPORTION AND NUMBER OF YEARS PARENTS REARED IN THE SOUTH, ALL SUBJECT GROUPS

Since many of the parents in all subject groups had been raised in the South, the possible deleterious influence of this variable on the small cognitive gain of the C Groups was studied through comparing the three groups of parents on this early experience.

A large proportion of parents in all three subject groups had indeed been reared in the South into late adolescence, with no significant difference among the groups, but the largest group and longest period for such rearing was found in the E Group. The lack of significant difference from the other groups, however, makes it impossible to generalize that such a life experience influenced the performance of the E children in a positive direction.

TABLE 6 -- EDUCATION OF GRANDPARENTS, ALL SUBJECT GROUPS

The possibility that E children were benefiting during intervention from direct contact or indirect influence from grandparents more educated than those in the C Groups was explored through data in Table 6. But maternal and paternal grandparents of E children were not better educated than those in the C Groups. Indeed, their schooling tended to be of shorter duration than the latters', especially the grandparents in the C_2 Group. It is interesting to note that in schooling completed (see Table 4), parents in all subject groups tended to follow the pattern of their own parents, with the wife being consistently of higher education than her husband. But note also the rather marked upward educational mobility of parents in all three groups. Low as the education of these parents might have been in relation to general social requirements for "success", it was still considerably higher than that of their own parents.

TABLE 5

PROPORTION AND NUMBER OF YEARS PARENTS REARED IN THE SOUTH*, ALL SUBJECT GROUPS

	E Group**		C_1 Group			C_2 Group		
Parent	Mean Years	% of Group (N=33)	Mean Years	% of Group (N=9)	Sig. % (E and C_1)	Mean Years	% of Group (N=12)	Sig. % (E and C_2)
Mother reared in South	19.4	70	18.3	67	n.s.	16.8	50	n.s.
Father reared in South	20.9	64	18.8	44	n.s.	16.8	42	n.s.

*"South" defined as in U. S. Dept. of H. E. W., Equality of Educational Opportunity, p.8.

**No significant differences between High and Low Gainers.

TABLE 6

EDUCATION OF GRANDPARENTS - ALL SUBJECT GROUPS

Grandparents	E Group Mean School Grade Completed	C_1 Group Mean School Grade Completed	C_2 Group Mean School Grade Completed
Mother's Father	6.6	6.2	8.9
Mother's Mother	7.7	8.4	9.7
Father's Father	6.7	6.0	6.8
Father's Mother	6.1	7.8	8.9

TABLE 7 -- ATYPICAL BIRTH FEATURES, ALL SUBJECT GROUPS

Premature birth (as measured by low birthweight) and prolonged or precipitous labor in childbirth has been linked with the minimal brain damage which has sometimes been associated with learning difficulties. To explore the possible greater presence of the m.b.d. syndrome in the C children, thus handicapping them in relation to the E Groups, data was gathered on atypical birth features in all groups. The differences among the three groups were found not to be significant on both birth features, although a considerably higher proportion of E and C_1 mothers reported atypical childbirth labor length than did C_2 mothers. No children in the C_2 Group could be classified as premature, compared to some in both of the other groups. Again, the C_2 Group of children seemed, if anything, to be favored by the data.

"Atypical birth features" does not appear to present an explanation for the greater cognitive gain of the E children.

TABLE 8 -- SOCIAL-ENVIRONMENTAL FAMILY CHARACTERISTICS, ALL SUBJECT GROUPS

Within the similar housing facilities of all three subject groups, considerable variety was observed in the life styles of the subject families, resulting in children growing up in quite different physical settings. Ratings of the physical environment in which the sessions or interviews occurred were made on a descriptive scale ranging from I (which can be summarized as being most conducive to comfort) to IV (summarized as being least conducive to comfort), with each child's home being rated. Although E Group homes had more I and II ratings, no significant differences were found among the groups on this variable.

The presence of cognitive stimulation in the subjects' home was noted in terms of such items as reading materials, phonographs, radios, television sets, pictures, and non-intervention toys. A large proportion of homes were observed to have all of these items, and there were no significant differences among the three groups.

TABLE 7

ATYPICAL BIRTH FEATURES - ALL SUBJECT GROUPS

Birth Features	% of E Group* (N=33)	% of C_1 Group (N=9)	% of C_2 Group (N=12)	Diff. E and C_1	Diff. E and C_2
Childbirth precipitous or prolonged	51	56	25	n.s.	n.s.
Child's birthweight under 5 lbs.	12	22	0	n.s.	n.s.

*No significant differences between High and Low Gainers.

TABLE 8

SOCIAL-ENVIRONMENTAL FAMILY CHARATERISTICS - ALL SUBJECT GROUPS

Characteristic	% of E Group* (N=33)	% of C_1Group (N=9)	% of C_2Group (N=12)	Diff. E and C_1	Diff. Eand C_2
Home Rating I and II	60	56	50	n.s.	n.s.
Home Rating III and IV	40	44	50	n.s.	n.s.
Home Cognitive stim: Reading	64	66	66	n.s.	n.s.
Home Cognitive stim: Phono, Reading	94	88	100	n.s.	n.s.
Home Cognitive stim: TV/radio	97	100	91	n.s.	n.s.
Home Cognitive stim: Pictures, etc.	88	100	100	n.s.	n.s.
Home Cognitive stim: Toys, etc.	85	77	83	n.s.	n.s.
Father's SES Class V	82	78	42	n.s.	$p < .05$
Father's SES Class III or IV	18	22	58**	n.s.	$p < .05$
Mother receives Welfare	15	22	0	n.s.	n.s.
Mother works part time	12	11	42	n.s.	n.s.
Mother works full time	31	22	25	n.s.	n.s.
Father unemployed more than one week	23	22	25	n.s.	n.s.
Father absent from home more than one week	30	56	16	n.s.	n.s.

*No significant differences between High and Low Gainers

** One father in Class III

As expected in recruiting subjects from low income housing projects, all of the subject families were found to be of Class IV or V socio-economic status (Hollingshead), with the exception of one C_2 family in Class III. But both E and C_1 Groups contained a much larger number of Class V families than the C_2 Group, which differed significantly from the E Group in this respect at the .05 level.

The source of the mothers' income as well as time spent working away from home differed among the three groups, but not at a significant level. Some mothers in the E and C_1 Groups were welfare recipients, but none were in the C_2 Group. About two-thirds of the C_2 Group mothers worked either full or part time, while the proportions were smaller in the E and C_1 Groups.

Unemployment among the fathers was in almost the same proportion among the three groups. The father lived for the whole intervention period in more of the C_2 homes than in those of the E and (especially) C_1 Groups, but the differences were not significant.

The only significant social-environmental differences found among the subject groups was in SES, with more than half of the C_2 Group on a higher socio-economic level than either of the other two groups, although still within the low income range. Again, the C_2 Group was favored in the difference among the groups.

TABLE 9 -- MOTHER'S ASPIRATIONS FOR CHILD, ALL SUBJECT GROUPS

There were no significant differences distinguishing the three groups of mothers from each other in terms of what they wished educationally and vocationally for their children. Almost all of them wanted their children to acquire at least a high school diploma, but not quite as many E as C mothers desired professional occupations for them. Thus, if there were trends in the three groups, they would have been toward motivation in the C Groups in fostering the cognitive readiness of the children for such occupations.

TABLE 9

MOTHER'S ASPIRATIONS FOR CHILD - ALL SUBJECT GROUPS

Aspiration	% of E Group* (N=33)	% of C_1 Group (N=29)	% of C_2 Group (N=12)	Diff. E and C_1	Diff. E and C_2
Mother wants high school or college education for child	94	89	100	n.s.	n.s.
Mother wants professional occupation for child	40	56	50	n.s.	n.s.

*No significant differences between High and Low Gainers

TABLE 10 -- MAJOR FAMILY EVENTS OCCURRING IN INTERVENTION PERIOD, ALL SUBJECT GROUPS

The impact of important family events might have had some bearing on the cognitive performance of the children. The occurrence of such events during the intervention period in all three subject groups is shown in Table 10. One item, the child's attendance at nursery school, was similar for all three groups. Another item, mother's outside activity, was heavily weighted in the direction of the C_2 Group. C_1 reported clinic or medical visits for every family. Otherwise, the E Group was higher than the C Groups on all items, including the birth of new babies, an event which did not occur at all in the C Groups, and which might be expected to hinder rather than help the cognitive growth of the E Subjects.

TABLE 11 -- MOTHER'S REPORT OF OWN AND FAMILY REACTION TO INTERVENTION, E AND C_1 GROUPS

Since differences among the three subject groups were so few; and in the few cases where they existed, they indicated no advantage for the E Group, attention was turned to a comparison of the two groups which had received intervention, the E and C_1 Groups.

Intervention in both groups had been planned to equalize, as far as possible, the affective elements of the intervention while omitting for the C_1 Group the stimulation of verbal interaction believed to foster cognitive growth. The success of this effort seems demonstrated in Table 11, in which the mother's report in the Final Interview of her own and the family's reactions to the intervention show almost no significant differences between the E and C_1 Groups. One hundred per cent of both groups of mothers approved of their own version of the program; mothers in both felt that their children had improved generally and verbally; more mothers in both groups felt that their interaction with their child had improved than had not changed at all or (one C_1 mother) had deteriorated. The same interaction outcome was reported for fathers. Almost every mother agreed to continue with the Mother-Child Home Program for another year, and there was the same almost unanimous agreement on preferring the home to be at least part of the locus for an intervention program.

TABLE 10

MAJOR FAMILY EVENTS OCCURRING IN INTERVENTION PERIOD - ALL SUBJECT GROUPS

Family Event	% of E Group (N=33)	% of C_1Group (N=9)	% of C_2Group (N=12)
Illness of family member	45	22	16
Child's outside activity	33	11	8
Child attends nursery school	18	11	17
Mother started work or school	34	0	8
Mother absent from home	20	11	0
New Baby born	17	0	0
Mother's outside activity	39	33	83
Clinic/medical visits	80	100	50

TABLE 11

MOTHER'S REPORT OF OWN AND FAMILY REACTION TO INTERVENTION - E AND C_1 GROUPS

Mother's Report	% of E Group* (N=30)	% of C_1 Group (N=9)	Diff. E and C_1
Mother approves program	100	100	n.s.
Child improved generally	93	78	n.s.
Child improved verbally	97	88	n.s.
Mother's interaction with child changed in positive direction	70	44	n.s.
Mother's interaction with child changed in negative directon	0	11	n.s.
Mother's interaction with child did not change	30	44	n.s.
Positive change in father's interaction	54	33	n.s.
Negative change in father's interaction	0	0	n.s.
No change in father's interaction	33	22	n.s.
Father's interaction not available	13	44	n.s.
Mother prefers home locus to outside, or both	90	100	n.s.
Mother would participate 2nd year	100	89	n.s.
Interviewer's color difference had no influence on child or mother	93	100	n.s.
Interviewer's color difference had positive influence on child or mother	7	0	n.s.
Interviewer's color difference had negative influence on child or mother	0	0	n.s.
Mother knows goals of our program	93	33	$p < .01$
Siblings had positive reaction to program	90	56	$p < .05$

*No significant difference between High and Low Gainers in E Group

On one point there was unanimous agreement: the difference in skin color between the staff interviewer - Toy Demonstrators (who were "white") and most of the mothers had no negative influence on the child or his mother. Almost none said that there was a positive influence; the almost universal answer from both groups was that the color difference had no influence at all. The reliability of the answers in this charged area can only be guessed at. However, because of previous qualitative evidence during intervention of what appeared to be friendly relationships among mothers, children, and interviewers, we have no reason to doubt the mothers' statements.

The E and C_1 Groups did differ significantly on two variables. One was that almost all of the E mothers understood the cognitive goals of the E intervention, while only a third of the C_1 mothers could show such comprehension of their own program. The confusion of the C_1 mothers was to be seen also in some of their comments in an anonymous mid-intervention evaluation of their program, comments which usually indicated enthusiasm for the program but some questioning as to how it was an intellectual help to the child. This lack of comprehension of the C_1 program goals was to be expected, since cognitive goals could not be clearly delineated in a program aimed primarily at affective rather than cognitive factors.

The other significant difference between the two groups was less predictable. More than half of the C_1 mothers, compared to few of the E mothers, reported negative reactions of the C_1 child's siblings to the program. This was in spite of the C_1 siblings' receiving concrete gifts from the interviewer, in contrast to the siblings of the E children and their less tangible benefits. Evidently the privilege of playing with the E Child's toys and perhaps unknown factors influenced the E siblings more favorably than the gifts received by the C_1 siblings and perhaps unknown negative factors perceived by the C_1 siblings to be associated with the C_1 intervention.

TABLE 12 -- SHARED INTERVENTION VARIABLES, E AND C_1 GROUPS

There appeared to be no significant difference between the E and C_1 Groups on those variables on which both could be compared within the intervention. This applied to the time of the day home visits were made and to the presence of others besides the child at home sessions.

TABLE 13 -- EXPERIMENTAL AND COMPARISON$_1$ INTERVENTION SESSIONS AND MATERIALS, E AND C_1 GROUPS

As planned, there were differences in the number of sessions for each group, which were fewer for the C_1 Group, but with more time spent per session in the latter group. Every child in both groups received the number of VISM or gifts originally allotted.

TABLE 14 -- INTERPERSONAL ATTITUDES IN HOME SESSIONS, E AND C_1 GROUPS

There was marked similarity between the E and C_1 Groups in the affective climate of the home sessions, which was generally positive. The latter was especially true in the C_1 Group, where positive attitudes among the participants were always "moderately" or "markedly" present, and negative attitudes were always either "not" or "slightly" present. The E Group differed significantly from the C_1 Group on three aspects of this variable: there was less frequent demonstration by E children of positive attitudes toward older and younger siblings, and toward E children by their younger siblings. On the other hand, negative attitudes to or from siblings (or anyone else) were never "markedly" or even "moderately" present in home sessions. This finding suggests that E children were so absorbed in the business at hand -- verbally oriented play with mother and Toy Demonstrator -- that siblings were largely ignored.

It would appear that there were few significant differences between the E and C_1 Groups on any variable studied except the vital elements of the experimental intervention: verbal interaction focused around the verbal interaction stimulus materials.

TABLE 12

SHARED INTERVENTION VARIABLES, E AND C_1 GROUPS

Variable	% of E Group* (N=33)	% of C_1 Group (N=9)	Diff. E and C_1
Home sessions were in morning	70	44	n.s.
Home sessions were in afternoon	24	33	n.s.
Older siblings participate in sessions	54	56	n.s.
Father participates in sessions	24	33	n.s.
"Others" participate in sessions	27	22	n.s.
Others present at 11+ sessions	79	89	n.s.

*No significant difference between High and Low Gainers.

TABLE 13

EXPERIMENTAL AND COMPARISON$_1$ INTERVENTION SESSIONS AND MATERIALS, E AND C_1 GROUPS

Sessions and Materials	E Group Mean	Range	C_1 Group Mean	Range
Total Home Sessions	32.4	22-44	24	20-26
Home VISM Sessions	25.2	12-30	-	-
Home Review Sessions	7.1	0-12	-	-
Minutes per session	21.3	15-30	30	30
VISM or gifts assigned	28	28	26	26
Books assigned	12	12	-	-
Toys assigned	16	16	-	-

TABLE 14

INTERPERSONAL ATTITUDES IN HOME SESSIONS, E AND C_1 GROUPS

Positive Interpersonal Attitudes	% of E Group* (N=33)			% of C_1 Group (N=9)			Diff. E and C_1
Ratings:**	1-2	3-4	NA***	1-2	3-4	NA***	
Child to Toy Demonstrator	9	91	-	0	100	-	n.s.
Child to Mother	15	85	-	0	100	-	n.s.
Child to Father	15	33	52	0	44	56	n.s.
Mother to Toy Demonstrator	3	97	-	0	100	-	n.s.
Mother to Child	3	97	-	0	100	-	n.s.
Father to Child	24	24	52	0	44	56	n.s.
Older Sibling to Child	24	55	21	0	100	-	n.s.
Child to Older Sibling	37	42	21	0	100	-	$p<.05$
Child to Younger Sibling	36	37	36	0	56	54	$p<.05$
Younger Sibling to Child	45	18	36	0	56	54	$p<.01$
Negative Interpersonal Attitudes							
Child to Toy Demonstrator	100	0	-	100	0	-	n.s.
Child to Mother	100	0	-	100	0	-	n.s.
Child to Father	42	6	52	44	0	56	n.s.
Mother to Toy Demonstrator	100	0	-	100	0	-	n.s.
Mother to Child	100	0	-	100	0	-	n.s.
Father to Child	45	3	52	44	0	56	n.s.
Older Sibling to Child	79	0	21	100	0	-	n.s.
Child to Older Sibling	100	0	-	100	0	-	n.s.
Child to Younger Sibling	64	0	36	56	0	44	n.s.
Younger Sibling to Child	64	0	36	67	0	33	n.s.

*no significant difference between High and Low Gainers

**1= not present; 2= slightly present; 3= moderately present; 4= markedly present.

***Not Available

With so few significant differences demonstrated among the three subject groups, except for the experimental intervention itself, there would seem to be a firm association between the experimental intervention and the significantly greater cognitive and verbal gain in the E children as compared to C Groups.

Yet within the E Group there was a large range in the pre- and post-intervention cognitive change in the 33 E children, from a loss of seven IQ points to a gain of 33. By using the mean general intelligence gain of 18 IQ points as a dividing line, it was possible to separate the E Group into two sub-groups of 18 High Gainers (with change scores at or above the group mean) and 15 Low Gainers (with change scores below the group mean). The data on the E Group was then scrutinized for variables associated with high or low gain. No significant differences between High and Low Gainers were found on any of the background or intervention variables contained in Tables 2 through 14. Data pertinent only to High and Low Gainers -- that is, the total E Group -- were then examined for differences between the two sub-groups, starting with the actual number of times the E dyads were visited in their homes.

TABLE 15 -- FREQUENCY OF EXPERIMENTAL HOME SESSIONS, HIGH AND LOW GAINERS, E GROUP

TABLE 16 -- FREQUENCY OF VISM SESSIONS, HIGH AND LOW GAINERS, E GROUP

TABLE 17 -- FREQUENCY OF REVIEW SESSIONS, HIGH AND LOW GAINERS, E GROUP

There was no significant difference between the High and Low Gainers on the frequency of home sessions, even when broken down into VISM and Review Sessions.

TABLE 15

FREQUENCY OF EXPERIMENTAL HOME SESSIONS, HIGH AND LOW GAINERS. EXPERIMENTAL GROUP

E Subjects	Number of Sessions (VISM and Review)						Diff.
	-24	24-27	28-31	32-35	36-39	40-45	High and Low Gainers
High Gainers	2	4	3	1	7	1	n.s.
Low Gainers	1	1	3	4	6	0	n.s.

TABLE 16

FREQUENCY OF VISM SESSIONS, HIGH AND LOW GAINERS, EXPERIMENTAL GROUP

E Subjects	Number of VISM Sessions									Diff. High & Low Gainers
	12-13	14-15	16-17	18-19	20-21	22-23	24-25	26-27	28-29	
High Gainers	1	0	2	0	2	1	0	4	8	n.s.
Low Gainers	0	0	0	2	0	0	2	4	7	n.s.

TABLE 17

FREQUENCY OF REVIEW SESSIONS, HIGH AND LOW GAINERS, EXPERIMENTAL GROUP

E.Subjects	Number of Review Sessions								Diff.
	-4	4-5	6-7	8-9	10-11	12-13	14-15	16-17	High and Low Gainers
High Gainers	4	2	3	7	0	1	0	1	n.s.
Low Gainers	2	2	1	5	5	0	0	0	n.s.

TABLE 18 -- CATEGORY RATING MEANS FOR TOTAL INTERVENTION PERIOD, HIGH AND LOW GAINERS, E GROUP

Were there differences for High and Low Gainers within the home sessions themselves? Almost no differences appear between the two sub-groups on the means of intervention categories rated for every session. This is true not only of the child's own behavior but of the mother's and Toy Demonstrator's interaction with him, except for two aspects of the latter: mothers tended to "give information" somewhat more often to the Low Gainers than to the High Gainers, and the Toy Demonstrator was somewhat less successful in engaging the Low Gainer's interest in books. The differences, though significant at the .05 level, were between adjacent ratings of the categories and thus not of large enough magnitude to mark a strong distinction between the two groups in the category behavior within home sessions.

TABLE 19 -- FAMILY'S INTERSESSION PLAY WITH CHILD, HIGH AND LOW GAINERS, E GROUP

The experience of the children with verbally oriented play between sessions was equally unilluminating. Based on the mothers' reports, there were no significant differences between High and Low Gainers in their play interaction with parents, siblings, or others. There was a marked tendency for all family members in both sub-groups to play and read with the child. It should be noted that although fathers did not usually initiate play activities with the child, they did play frequently with the child, perhaps because the child usually showed his "play products" to his father, thus evoking a play response in the father.

However, a large amount of quantitative and qualitative data on the High and Low Gainers still remains to be explored, and this is now being analyzed in the hope of finding clues to the variability noted not only in this subject group but by other investigators studying cognitive functioning in similar low income groups.

TABLE 18

CATEGORY RATING MEANS FOR TOTAL INTERVENTION PERIOD, HIGH AND LOW GAINERS, EXPERIMENTAL GROUP

Categories	High Gainers (N=18) Ratings*				Low Gainers (N=15) Ratings*				Diff. High and Low Gainers
	1	2	3	4	1	2	3	4	
Toy demonstrator gives information	0	0	15	3	0	0	15	0	n.s.
Toy Demonstrator describes own toy manipulation	0	5	13	0	0	3	12	0	n.s.
Toy Demonstrator gives pos. motivation	0	0	14	4	0	0	15	0	n.s.
T. D. encourages reflection	0	0	17	1	0	3	12	0	n.s.
T. D. encourages divergence	0	2	15	1	0	3	11	1	n.s.
Mother. describes own toy manip.	7	9	2	0	5	6	4	0	n.s.
Mother elicits response	1	5	11	1	0	5	10	0	n.s.
Mother gives positive motivation	1	5	12	0	0	3	12	0	n.s.
Mother verbalizes social interaction	1	7	10	0	0	6	9	0	n.s.
Mother encourages reflection	2	13	3	0	1	10	4	0	n.s.
Child verbalizes information	0	9	9	0	2	5	8	0	n.s.
Child responds verbally	0	4	12	2	1	4	9	1	n.s.
Child speaks	1	7	9	1	4	3	8	0	n.s.
Child shows divergence	3	8	7	0	1	10	4	0	n.s.
Child shows positive motivation	0	0	18	0	0	2	12	1	n.s.
Child manipulates toy	0	1	15	2	0	1	11	3	n.s.
Child interacts socially	0	3	14	1	0	6	9	0	n.s.
Child shows interest in book	0	1	15	2	0	3	11	1	n.s.
Child accepts toy introduced	0	0	16	2	0	0	13	2	n.s.
T. D. engages child's interest in book	0	0	11	7	0	0	14	1	$p < .05$
Mother gives information	1	11	6	0	1	3	11	0	$p < .05$
T. D. elicits response	0	0	10	8	0	1	12	2	n.s.
T. D. verbalizes social interaction	0	0	14	4	0	0	15	0	n.s.
Mother encourages divergence	8	7	3	0	2	8	5	0	n.s.
Mother engages child's interest in book	0	7	11	0	0	2	13	0	n.s.
Ch's non-verbal commun. of info.	0	0	13	5	0	2	12	1	n.s.
Ch. demonstr. adequate concentration	0	1	14	3	0	5	9	3	n.s.

*1= not present; 2= slightly present; 3= moderately present; 4= markedly present.

TABLE 19

FAMILY'S INTERSESSION PLAY WITH CHILD
HIGH AND LOW GAINERS, EXPERIMENTAL GROUP

Family Member and Activity	Children in Experimental Group						
	High Gainers			Low Gainers			Diff. High and Low Gainers
	Yes*	No	Not Avail.	Yes*	No	Not Avail.	
Mother played with child	16	2	0	15	0	0	n.s.
Mother read to child	16	2	0	15	0	0	n.s.
Child showed products to father	12	4	2	12	0	3	n.s.
Father played or read to child	11	5	2	8	4	3	n.s.
Father initiated play w. child	3	13	2	4	8	3	n.s.
Child initiated play w. father	9	7	2	4	8	3	n.s.
Siblings played with child	14	4	0	12	1	2	n.s.
Older Siblings (school age or above) played with child	12	2	4	12	1	2	n.s.
Other played or read to child	4	14	0	2	13	0	n.s.

*Activity must be reported in 50% or more Intersession Records to be counted as "Yes".

Summary of Major Findings

1. Since no essential differences appeared in statistical comparison of the E, C_1 and C_2 subject groups, whether in background or in experiences occurring during the intervention period, to account otherwise for the large cognitive and verbal gains of the E children, their significant cognitive growth must be attributed to the experimental cognitive intervention program.
2. The intervention was effective regardless of the age of the children, between 20 and 43 months.
3. The experimental intervention did not raise the verbal intelligence of the participating mothers.
4. Low income mothers with limited intellectual and educational attainments effectively fostered the cognitive and verbal growth of their preschool children.
5. Although verbal interaction was the means of fostering cognitive growth, the rise in the E children's verbal intelligence was not so great as that in their general intelligence, according to their scores on the Peabody Picture Vocabulary Test. (This raises some question about the validity of the instrument for children in this age group.)
6. Families in the C_2 Group, although almost all within SES Classes IV and V (Hollingshead), tended to be of higher occupational and educational status than those in the E and C_1 Groups. This difference might have been reflected in the higher pretest IQ's of the C_2 children.
7. Since the E Group families were larger than those in the C_1 and C_2 Groups, with a mean of more than 6 per E family, it appears that large families not only did not preclude this kind of intervention but may actually have fostered it. This view is supported by the reports of reinforcement received by the child in play interaction with siblings between the home intervention sessions.

8. Cognitively stimulating materials were substantially present in the homes of all three subject groups. They were evidently insufficient in themselves to foster cognitive growth.

9. The favorable reaction of E families to the intervention program was expected. But the C_1 mothers' favorable reaction to their own "single intervention" version of the program was a rather moving illustration of the subject group's readiness to grasp at any interventive straw which promises the possibility of educational gains for their children.

10. According to the mothers' reports, the difference in skin color between "white" interviewers and "black" dyads did not influence results, suggesting that this variable is not important in a home based intervention program.

11. The cognitive and verbal gain in the E children was caused, not by the halo effect of pleasant home visits and gifts by an interested professional interviewer, but by the stimulation of verbal interaction in the E mother-child dyads.

To summarize, the experimental intervention -- home based stimulation of verbal interaction, through verbally oriented play activity, in mother-child dyads -- was an effective agent for cognitive and verbal growth in the E Group children, regardless of age, size of family, or any other background factor contained in Tables 2 through 19.

Other factors associated with high and low gain within the E Group are still being pursued through continuing analysis of the data. The major question of whether there will be retention of the cognitive growth achieved in seven preschool months through the experimental intervention will be explored in future years through follow-up studies of the children's progress in nursery and primary school grades.

IV. PROPOSED PLANS FOR THIRD YEAR OF GRANT (JULY 1969-JUNE 1970)

As originally planned, follow up studies are scheduled for the third year of research to garner information on whether the E children will retain the cognitive gains made during the First and Second years of research. Initial follow up activity has begun in the Second Year to lay the ground work for obtaining the nursery school teachers' social and cognitive evaluations of former First Year E children now in their programs. In the Third research year the kindergarten experience of these children, by that time about five years of age, will also be evaluated and school test scores collected, where these are available. Subjects who were two years old in the First Year and thus four in the Third Year will be followed up in the same way.

Cognitive gains of Second Year Subjects will be reinforced by the same methods used this year with First Year two year olds. In order to do this, and for demonstration, research, and teaching purposes, the Family Service Association of Nassau County proposes the continuation of the full experimental intervention program (Mother-Child Home Program) through the Third Year. The need for a continuing, live program for demonstration and teaching, should the intervention prove successful, began to become apparent before the end of the First Year: the Project received requests for aid in setting up similar programs as a result of the publication of a description of the pilot study in January 1968.[58] These were additional to the more than 100 requests for reprints of the paper received from all parts of the United States and from ten other countries. It is anticipated that with the presentation of the favorable outcome of the First Year's investigation at the Spring, 1969, meeting of the American Orthopsychiatric Association, the requests for consultation on establishing similar programs will increase. Thus far the Second Year replication of the intervention program with non-professional Toy Demonstrators has functioned not only as planned in the recruiting of subjects and Toy Demonstrators, and in the Training Program for the latter, but has more than fulfilled expectations. The value of retaining the Second Year intervention program in particular (with its employment of non-professional personnel) for demonstration and teaching purposes has already become clear.

Equally important, as indicated above, are continuing research aspects of the program. Besides the follow up studies, some of the questions unique to this program and needing investigation are:

1. Can we train non-professional women of limited education and job experience to be Toy Demonstrators, if they have not themselves been mother participants? Can we thus, in effect, open up a new career to such individuals?
2. Can our Training Program provide skills as efficiently to non-professionals sent to us by outside agencies as to our own prospective non-professional Toy Demonstrators?
3. Can the experimental intervention be used as effectively with Spanish speaking as with English speaking families?
4. Can the subject group be expanded into a low income population, white or black, beyond the limits of the public housing projects?
5. Which reinforcement, if any, with former E children will prove most effective?
6. In disseminating information about the program, which materials and teaching techniques -- e.g., Handbook of Toy Demonstrator Techniques, tapes, films -- will prove to be most helpful?

These questions can best be answered by a continuation of the existing intervention program, with possibly an expansion of preschool subject population as well as expansion of non-professional personnel utilized as intervention agents.

V. PROJECTION OF FUTURE RESEARCH

Reflection concerning the possibilities for future research raised by the successful First Year Outcome and by the encouraging progress thus far in the Second Year suggests that continuation of the intervention program beyond the Third Year should be considered, for the following reasons:

1. Follow up studies on each successive E Group of children would be increasingly valuable, measuring them against the First Year C_2 Group and against their school mates on preschool and elementary school mates on preschool and elementary school achievement. Ideally, this should extend into the fifth grade. Investigators in this area have generally remarked that cognitive gain retention cannot be considered stable until the third or even the fifth grade of school.
2. Reinforcement of gains made by the previous year's two year old subjects should occur in each succeeding year, to preserve the broad similarity of the intervention for all E Group children.
3. The Mother-Child Home Program should continue as a research program to test out such innovations as: new kinds of non-professional personnel and new kinds of subject groups within the low income population; differing time periods for intervention; new materials and procedures within the original methodological framework; training methods for new careers.
4. The intervention program should continue for the same demonstration reasons existing in the Third Year: consultation and teaching of intervention is likely to be most effective in the presence of an ongoing program. But the necessity for such a model may be more pressing as the years go on, to serve as a reference for standards of procedures and materials which may otherwise more readily be diluted when the program is emulated by other agencies.
5. There should be a continued refinement of the Training Kit, as part of the dissemination of knowledge about the program.

6. The effects of the program on the families of the dyads should be explored in more detail. How much downward (or even upward) diffusion of the program's effect occurs among E Group siblings? What effect does the program have on affective variables in the family? In the mother? How lasting are such effects? Is it possible to measure more exactly the affective components of the cognitive intervention itself?

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DATA CARD I VIP 196_ - 6_ MOTHER: INTERVIEWER: CHILD:

VARIABLE	INFO	CODE	VARIABLE	INFO	CODE	VARIABLE	INFO	CODE	VARIABLE	INFO	CODE	VARIABLE	INFO	CODE	INFO	CODE
CHILD									MOTHER			FATHER			Miscellaneous	
Group		1	Others at session		31-32	Home Rating		B33-34	Age		R1-2	Age		B1-2	Ch-Pre Non-Op	B20
E Group		2	Father partic. in session		33	Atypical intervention		B35	No. yrs. Education		R3-4	Father older than mother		B3	Ch-Post Non-Op	B21
C Group		3	Older siblings participate		34	INTERCESSION Major Life Events		B33-38	Part-time or full-time wrk hrs		R5-6	Father younger than mother		B4		
Sex		4	Young siblings participate		35	Toy Use Book Use		B37 B38	Support source	Fa. DW. Self	R7-8	No. yrs. Education		B5-6		
Birthweight		5	Others Participate		36	Showed to Father		B39	1st 11 yrs. in South		R9	Fa. less educ. than mother		B7		
Hrs. in Labor		6	Favorite inters. toys		37-42	Father initiated play		B40	No. yrs. in Hous. Proj.		R10	Part-time or full-time wrk. hrs.		B9-10		
Reg. out. activity		7	Favorite inters. books		43-49	Child initiated play with Fa.		B41	Reg. out. activity		R11	Support source	Other Self DW Mo.	B11-12		
Nursery School		8	IQ (Pre)		L1-4	Father play with child		B42	No. SES..	Occ. Ed. Class.	R12	1st 11 yrs. in South		B13		
Month age 8/67		9-12	IQ (Post)		L5-8	Siblings play with child		B43	Mo's Fa. SES	Occ. Ed. Class	R13	Reside in Home		B14		
No. E or C Sessions		13-16	Difference IQ		L9-12	Others play with child		B44	Mo's Fa. Home Rating		R14	Father SES	Occ. Ed. Cl.	B15		
No. Rev. Sessions		17-20	PPVT IQ (Pre)		L13-16	SIBLINGS			Mo's Mo. SES	Occ. Ed. Class.	R15	Father's Fa. SES	Occ. Ed. Cl.	B16		
Total No. Sessions		21-24	PPVT IQ (Post)		L17-20	Older Siblings	Sex Gr.	B25-28	Mo's Mother Home Rating		R16	Father's Fa. Home Rating		B17		
Rec. all toys/gifts		25	Difference in PPVT IQ's		L21-24	Younger Siblings	Sex	B29-30	Mo's PPVT IQ (Pre)		R17-20	Father's Mo. SES	Occ. Ed. Cl.	B18		
Rec. all books		26	No. at home besides child		L25-26	Tot. No. of siblings		B31-32	Mo's PPVT IQ (Post)		R21-24	Father's Mo. Home Rating		B19		
N Sess. Minutes		27-28	Tot. No. Rooms		L27-28				Mo's Difference PPVT IQ's		R25					
Time of day		29-30	Home cog. stim.		L29-32	MSRS Pre		R-26	MSRS Post		R27	MSRS Differ.		R28	VIP/FSANC 4/68	

7 4 2 1 7 4 2 1 7 4 2 1 7 4 2 1 7 4 2 1 7 4 2 1 7 4 2 1 7 4 2 1 7 4 2 1 7 4 2 1 7 4 2 1 7 4 2 1
48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

DATA CARD II - VIP 19 - 19 CHILD:

Ratings: CATEGORIES	Total all Sess.	Mean all Sess.	Code	Diff. Beg. & End	Code	Total 9 Freq.		
TOY DEMONSTRATOR								
Gives Information			1-2		L5			
Elicits Response			3-4		L6			
Describes Own Toy Manipulation			5-6		L7			
Gives Pos. Motivation			7-8		L8			
Verb. Soc. Interact.			9-10		L9			
Enc. Reflection			11-12		L10			
Enc. Divergence			13-14		L11			
Eng. Int. in Book			15-16		L12			
MOTHER								
Gives Information			17-18		L13			
Elicits Response			19-20		L14			
Describes Toy Manip.			21-22		L15			
Gives Positiv. Motiva.			23-24		L16			
Verb. Soc. Interaction			25-26		L17			
Enc. Reflection			27-28		L18			
Enc. Divergence			29-30		L19			
Eng. Int. in Book			31-32		L20			
CHILD								
Verbalizes Information			33-34		L21			
Non-Verb. Comm. Inf.			35-36		L22			
Responds Verbally			37-38		L23			
Speaks			39-40		L24			
Dem. Adq. Concentration			41-42		L25			
Shows Divergence			43-44		L26			
Shows Posit. Motiva.			45-46		L27			
Manipulates Toy			47-48		L28			
Interacts Socially			49-50		L29			
Shows Int. in Book			L1-L2		L30			
Accepts Toy Introduced			L3-L4		L31			

GROUP: TD or VLB:

Ratings: SESS., ATTITUDE..	Total all Sess	Mean all Sess	Code	Mean 9 Freq.
POSITIVE INT. ATT.				
Child to Toy Dem.			B1	
Child to Mother			B2	
Child to Father			B3	
Child to Older Sib.			B4	
Child to Younger Sib.			B5	
Mother to Toy Dem.			B6	
Mother to Child			B7	
Father to Child			B8	
Older Sibling to Child			B9	
Younger Sibling to Ch.			B10	
NEGATIVE INT. ATT.				
Child to Toy Dem.			B11	
Child to Mother			B12	
Child to Father			B13	
Child to Older Sib.			B14	
Child to Younger Sib.			B15	
Mother to Toy Dem.			B16	
Mother to Child			B17	
Father to Child			B18	
Older Sibling to Child			B19	
Younger Sibling to Ch.			B20	

VARIABLE	INFO	CODE	VARIABLE	INFO	CODE
Sibs.at sess					
Oth.at sess					
Fa.per.sess					
M sess mins					
Time of day					
Toy use int					
Book use int					
Maj. Life Ev					
Atyp.interv.					

TO CORRELATE WITH :

VARIABLE	INFO	CODE
Sex		
Age 8/67		
Birthweight		
Abnormal Birth		
Pre-Test IQ's or Scores:		
C-C or SB		
C-PPVT		
M-PPVT		
M-MSRS		
Post-Scores ± Pre-Scores:		
C-C or SB		
C-PPVT		
M-PPVT		
M-MSRS		
SES - Holl		
No. Ed.		
Mother work part-time		
Mother work full-time		
Mother - Age		
Mother - South		
Mother - up Mob.		
Home Stim.		
Mother out. Att.		
No. Rev. Sess.		
No. All Sess.		
Mother's Att.		
No. Siblings		
Siblings in VIP		
Child - Nursery		
Father - Home		
Siblings Played		
Home Rating		

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APPENDIX - C

DATA CARD III - VIP 19__ - 19__ CHILD: GROUP: E ID: TO CORRELATE WITH:

Subcat. Frequency:

CATEGORIES	Subcat.	No.	Subcat.	No.	Subcat.	No.	Subcat.	No.	Subcat.	No.	Subcat.	No.	Subcat.	No.	Subcat.	No.	VARIABLE	INFO	CODE
TOY DEMONSTRATOR															describes		Sex		
Gives Information	form		color		size		texture		naming		causality		relationshp		number		Age 8/67		
Elicits Response	questions		assoc. to experience		invites response												Birthst.		
Describes Own Toy Manipulation	muscle		builds		matches		fits		specific motor skills		sound patterns						Abn. Birth		
Gives Positive Motivation	verbal support		urges attention		help												Pre-test	IQs or Scores:	
Verbalizes Social Interaction	invites		directs		cooperates												C-C or SB		
Encourages Reflection	altern.		conseq.		restrains impulsiv.		redirects attention										C-PPVT		
Encourages Divergence	independ.		curiosity		difference		imagination										M-PPVT		
Engages Interest in Book	ch. close		uses illus.		elicits verbal.		assoc. to ch. exp.		reads aloud		flexible voice						M-MSRS		
MOTHER															describes		Post-Scores ± Pre-Scores:		
Gives Information	form		color		texture		size		naming		causality		relationshp		number		C-C or SB		
Elicits Response	questions		assoc. to exp.		invites response												C-PPVT		
Describes Toy Manipulation	muscle		builds		matches		fits		specific mot. skills		sound patterns						M-PPVT		
Gives Positive Motivation	verbal support		urges attention		help												M-MSRS		
Verbalizes Social Interaction	invites		directs		cooperates												SES - Holl		
Enc. Reflection	altern.		conseq.		restrains impulsiv.		redirects attention										No. Ed.		
Enc. Divergence	independ.		curiosity		difference		imagination										No. sk.pt		
Eng. Int. in Book	ch. close		uses illus.		elicits verbal.		assoc. to ch. exp.		reads aloud		flexible voice						No. sk. ft		
CHILD															own behav.		No. age		
Verbalizes Information	form		color		size		texture		naming		causality		relationshp		number		No. South		
Non-Verbal Communica. of Information	vocalizes		recognizes		gestures		cues										No. un Hsb.		
Responds Verbally	imitates		answers		converses												Home Stim.		
Speaks	vocalizes		soliloq.		questions		initiates conversa.		narrates		describes						No. out.att.		
Demonstrates Adequate Concentration	listens		focuses visually		hyperact.		distract.		app. attn. shift								No. Sev. Se		
Shows Divergence	investig.		experimts.		differs		dramatizes		init. ind. play								No.all Sepn.		
Shows Positive Motivation	interest		pleasure		joy		efficacy										No. att.		
Manipulates Toy	muscle		builds		matches		fits		spec. motor skills		sound patterns		inapprop. manip.		takes apart		No. Sibs.		
Interacts Socially	complies		initiates		cooperates		plays with		solitary play		helps				takes care		Sib. in VIP		
Shows Int. in Book	close		listens		approp. activity		verbalizes		associates								Ch.-Nursery		
Accepts Toy Introduced	looks at		holds		verb. pleasure		indicates pleasure		plays with								Fa. home		
Other																	Sibs.played		
																	Atypic. Int.		

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DATA CARD IV - VIP 1967-1968 CHILD:

GROUP:

TD OR VISITOR:

FINAL INTERVIEW QUESTIONS, MOTHER:

#	VARIABLE	INFORMATION	CODE
FOR	E(FREEPORT)&C, GLEN COVE)		
1	Approves Prog.		
2	Knows goals		
3	Verb int import		
4	Ch improve		
5	Ch more verb		
6	Mo: interac change		
7	Fa:interac change		
8	Sibs: reaction		
10	Wants directions		
11	Improves agent		
12	Li teach role		
13	Scss locus pref		
14	Partic 2nd yr		
16	Color influence		
FOR	E(FREEPORT)ONLY		
9	VISM, no TD		
15	Mo= 2nd yr TD		
17	Will be TD		
18	Tape use OK		
19	Comp TD tech		
20	Why no sess		
21	Mo: do at sess		
22	Mo: do intersess		
23	Daily play		
24	Play: amt diff		
25	Play: more ver		
26	Gen: more ver		
27	Prog taught		
28	Reads: daily		
29	Reads: amt diff		

#	VARIABLE	INFORMATION	CODE
30	6½ mos. OK		
31	2x wk. OK		
32	VISM vs. Review		
33	TD activ OK		
34	Mo tak ov x OK		
35	Mo work interfer		
36	Change: toy amt		
37	Change: book amt		
38	VISM care OK		
39	VISM destruction		
40	Mo: favor toy		
41	Mo: unfavor toy		
42	Mo: favor book		
43	Mo: unfavor book		
44	Mo: VISM change		
FOR	ALL 3 GROUPS:		
45	Hospital		
46	Clinic-medical		
47	Sib born		
48	Fa: unemployed		
49	Fa: absen		
50	Ch: favor toy		
51	Ch: favor book		
52	Maj life event		
53	Ch: Post-test OK		
54	Ed aspirations		
55	Occ aspirations		
56	Sugg, critic		
57	Interview att		
58	Home rating		
59	Ch: nursery		

DYAD SUMMARY QUEST; E&C, TD or VIS:

#	VARIABLE	INFORMATION	CODE
2	Cognit stim		
3	Maj life event		
4	Mo appt patt		
5	Mo wk effect		
6 7	Mo motiv Impact on fam		
8	Ch cog prog		
9	Ch speech		
10	Ch: observ IQ		
11	Mo: observ IQ		
12	Social adj		
13	Mo-ch relat		
14	Fa-ch relat		
15	Sib-ch relat		
16	Oth-ch relat		
17	Mo self est		
18	Time adeq		
19	VISM vs. Rev Sess		
20	Oth at Sess		
21	Sib in Prog		
23	VISM durabil		
24	Suggestions		
OTHER:			
	Inter IQ pred		
	Mo:# brck appt		
	TD:# brck appt		
	Post-test taped		
	Mo: worked		
	Mo: oth x com		

TO CORRELATE WITH:

VARIABLE	INFORMATION	CODE
Sex		
Age 8/67		
Birth wt		
Abn birth		
Pre-test	IQ's or Scores	
Ch-C or SB		
Ch-PPVT		
Mo-PPVT		
Mo-MSRS		
Post-scores	+ - Pre-scores	
Ch-C or SB		
Ch-PPVT		
Mo-PPVT		
Mo-MSRS		
SES-Holl		
Mo ed		
Mo wk PT 50%		
Mo wk FT 50%		
Mo age		
Mo South		
Mo up mob		
Home stim		
Mo out att		
# Rev Sess		
# all sess		
Mo att		
# sibs		
Sib in VIP		
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